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EXECUTIVE OFFICE OF THE PRESIDENT

BUREAU OF THE BUDGET

WASHINGTON 25, D.C.

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AND BUREAU OF THE BUDGET

13 1963

Honorable John A. McCone
Director of Central Intelligence
Central Intelligence Agency
Washington 25, D. C.

Dear Mr. McCone:

Attached is Bureau of the Budget Bulletin No. 63-13, regarding a special, expeditious review of the need for offices and missions abroad. The different Federal departments and agencies having offices outside the United States are categorized as "selected agencies"--those with extensive overseas operations--and "all other agencies"--those which are active only in a limited number of foreign locations. In publishing this Bulletin, we have deleted listing the Central Intelligence Agency as one of the "selected agencies," but I wish to inform you that your Agency, and its major proprietaries are to be so considered. Accordingly, Bureau of the Budget staff will contact your staff to work out special procedures for the purposes of this review.

Sincerely,

(signed) Kermit Gordon
KERMIT GORDON
Director

Attachment

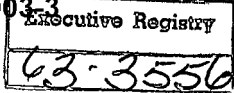
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EXECUTIVE OFFICE OF THE PRESIDENT
BUREAU OF THE BUDGET
WASHINGTON 25, D.C.

OFFICE OF
THE DIRECTOR

APR 26 1963

Honorable John A. McCone
Director
Central Intelligence Agency
Washington 25, D. C.

Dear Mr. McCone:

I wish to draw your personal attention to the enclosed special report by the Bureau of the Budget entitled Cost Reduction Through Better Management in the Federal Government.

Two points, in particular, need to be stressed regarding the report. First, it gives specific details about cost-reduction efforts throughout the Government, demonstrating that this Administration can point to notable accomplishments in management improvement. Secondly, the report should serve as a stimulus to each department and agency to intensify its own efforts to find more economical ways of doing its job.

I urge you to bring the report to the attention of your key officials, both in Washington and in the field, and to give personal leadership to the pursuit of further efficiency gains in your agency. In the light of our budgetary problem, it seems to me a matter of the highest importance that this Administration continue to build an impressive record of managerial excellence.

Sincerely,

Kermit Gordon

KERMIT GORDON
Director

Enclosure

(EXECUTIVE REGISTRY FILE *Bureau of Budget*)
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Remarks:

I have asked OCR to get 50 additional copies and will do a covering memorandum to the heads of all components.

LBKirkpatrick

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COST Reduction

Through
Better Management
in the
Federal Government

EXECUTIVE OFFICE OF THE PRESIDENT • BUREAU OF THE BUDGET

Introduction

Two years ago the Bureau of the Budget published a report on management improvement in the Government. It reviewed measures taken in the Government in the post-war years to raise the productivity of the Federal work force, economize in the use of taxpayers' money, and improve the quality of service to the public. The report showed that substantial improvements in economy and efficiency had been achieved, and that efforts towards improvement had strong top-level support throughout the postwar period. It was clear that those cost reduction and better management efforts produced results that merit continuing, vigorous support in the future.

This report, compiled in the Bureau of the Budget, brings to light important new developments in management improvement and cites selected examples. It does not describe a utopia; much remains to be done. Nevertheless, it indicates a healthy climate of critical self-appraisal throughout the Federal Government and a sustained drive for new and still better methods of improving the organization, control and use of manpower.

There is both range and depth to the Government's efforts to improve the conduct of the public business. From typesetters in the Government Printing Office to the Defense Department officials who sign multimillion-dollar contracts, Federal workers and supervisors are seeking to improve on their own performance. Their watchfulness and enterprise are paying dividends, as this report makes clear.

One of the newest and most promising facets of this overall campaign is a program to improve the use of manpower in the executive branch. It was launched by the President on October 11, 1962, in a memorandum to the heads of departments and agencies. His goal, the President said, is "to limit the number of Federal employees to the absolute minimum

necessary to get the public business done." Achieving that goal is essential, he explained, not only to hold down the cost of Government but because "the Federal Government is competing for a scarce supply of manpower," especially in such fields as science, engineering, and medicine. The President's program has five main elements:

- (1) the clear placement of responsibility for manpower control and utilization in the head of each agency,
- (2) establishment in each agency of systematic methods for discovering better uses of manpower and putting them into effect,
- (3) strong emphasis on research in methods of increasing productivity,
- (4) budget policy that anticipates, and budget practices that contribute to, increases in productivity, and
- (5) the development of procedures for reviewing agency manpower utilization policies.

What follows is a report of progress in the never-ending effort to find better and more economical ways of carrying out the vast responsibilities of the Federal Government. Individual advances in public management are rarely dramatic; but the sum total of such advances is an important measure of the responsiveness of Government to the needs and values of the people.

Similar reports on future progress will be published from time to time.

APRIL 24, 1963.

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AUTOMATIC DATA PROCESSING

No single technological advance in recent years has contributed more to efficiency and economy in Government operations than the development of automatic data processing (ADP) equipment. Most commonly, ADP means the use of high-speed electronic computers, although it has other aspects. The Federal Government was the first user of ADP for business management purposes (as well as research and scientific uses) and today is far and away the largest such user.

As in any technological breakthrough of this magnitude, several years of pioneering were necessary before the potential of the computer for the Government was adequately recognized. Finding ways to harness the computer to the work of Government was a major undertaking. Beginning with the earliest uses 12 years ago, when few people understood the capabilities and limitations of computers, beneficial applications have been made with increasing momentum. Although the learning process was costly, it has paid striking dividends.

The benefits have flowed both ways: to the Government, in the form of more efficient operations; and to the public, in the form of faster, more reliable services and through advances in systems design of value to business, educational, and scientific users.

Many and Varied Uses of Computers

Within the Federal Government, the uses of ADP equipment have been many and varied—from the control of missiles in flight to more economical handling of postal money orders. ADP techniques and equipment, and their intelligent application, have permitted reductions in clerical work forces and even the closing down of entire sections or offices. ADP equipment has shortened the time needed to compile census data and make it available to the Government, business firms,

and research institutions. It has eased the enormous burden of producing the millions of checks issued by the Treasury Department and, by allowing geographical sorting of some of the checks before mailing, it has eased Post Office's distribution job. ADP equipment is helping the Internal Revenue Service check up on the filing of income tax returns. The use of ADP equipment is speeding the nation's air traffic. It is even helping keep undesirable drivers off the Nation's roads. In these and other ways, it is holding down growth in the Federal payroll and contributing to greater output per employee.

Benefits in Economy and Efficiency

In virtually every instance, systems designed to use ADP equipment help the Government economize the taxpayers' money. Sometimes the saving is tangible, as when installation of a computer makes it possible to eliminate jobs. Sometimes the saving is harder to calculate. For instance, computer-based systems may make it possible for employees to be shifted to other duties, obviating the hiring of additional personnel. Or, it may enable an agency to do a better job—such as faster publication of the results of the decennial count of the entire population or of more specialized censuses, such as the census of manufacturing. Aware that a tool is only as good as the craftsman who wields it, the Government, under the leadership of the Bureau of the Budget, is making special efforts to discover the most effective uses for ADP equipment. It is being introduced on a highly selective basis. Before automating manual operations, agencies are required to have a carefully drawn, workable blueprint and the skilled personnel necessary to operate ADP equipment and get the most out of it. Since conversion to ADP is typically an expensive undertaking, particular attention is being given to the use of ADP where it will yield the greatest return.

To get maximum use out of its investment in ADP, and to prevent excessive investment, strong emphasis is being put on sharing of computers—among agencies and within agencies. An experimental sharing exchange has been set up in the Philadelphia area, where there are 45 sizable offices of Federal agencies; another is being established in Washington, D.C.,

where there is the largest concentration of computers in the Nation. Measures are under way to establish regional sharing arrangements in nine other major metropolitan areas. Sharing is also done on a functional basis; for example, Post Office money orders are computer-processed in the Treasury Department. When this joint use is fully in effect in June 1963, the Post Office and the Treasury expect to realize a reduction in personnel requirements of about 170 employees at a saving of about \$650,000 a year.

Significant economies also can be realized from intra-agency sharing of ADP. A Department of Agriculture computer center in Kansas City, Mo., handles data formerly processed in both Kansas City and Evanston, Ill., reducing annual personnel and machine costs by \$800,000. The Federal Crop Insurance Corporation also uses the Kansas City facilities and other uses are being planned. The Department's New Orleans computer center now performs work for the Soil Conservation Service which formerly was contracted out at a greater cost. The New Orleans installation also will take on the task of preparing all of the Department's payrolls and will effect efficiencies in certain personnel and fiscal operations which are expected to save about \$1.3 million a year.

One reason computers can cut deeply into a Government agency's (or a business firm's) costs is that they can be adapted to handle a variety of information. For example, the U.S. Geological Survey, a part of the Interior Department, has developed an integrated computer-based system embracing payroll accounting, leave accounting, personnel cost distributions and statistics, and budgetary accounting. The heart of the system is a single master file—a magnetic tape on which are recorded some 80 items of information for each of the Survey's 8,000 employees.

Similarly, the Peace Corps, through ADP services obtained from the Agency for International Development, enters on computer tapes a host of facts about its thousands of prospective volunteers. Also entered on tape are data about the jobs which the Corps has been invited to take on in foreign countries—necessary skills, languages, age and education requirements, and so forth. Operating at incredibly high speeds, the

computer "matches" each applicant against job requirements and produces a printed table which enables Peace Corps staff employees to select the applicants best suited for the position to be filled. Manual matching would not be nearly so fast or thorough.

The computer has been put to still another kind of use by the Agricultural Stabilization and Conservation Service. It established a data processing center in the field to carry out its grain operations more efficiently. So far, the loan operations of five offices have been consolidated, eliminating five separate sets of accounts.

Benefits to Industry and the Public

Advances in systems design, with the aid of ADP equipment, have made possible cost-cutting industry-Government cooperation. By exchanging information in the form of magnetic tapes, punched-paper tape and punched cards, both industry and Government realize mutual reductions in administrative expenses. For example, some private employers and Federal agencies are experimenting with giving the Social Security Administration, in a form usable by ADP equipment, reports on wages paid and taxes withheld. Some private research organizations buy copies of magnetic tapes from the Census Bureau for use in their own computers. These tapes contain intermediate or summary results with no disclosure of data regarding individual respondents. As technical problems, such as compatibility of equipment, are resolved, a more widespread use of such exchanges of information is likely to develop.

The Railroad Retirement Board and the railroads are using ADP equipment to their mutual advantage. The Board maintains a master file on magnetic tape of the accounts of 10 million past and present railroad employees. The file is brought up to date four times a year with information supplied by the carriers. About 25% of the quarterly reported information is being supplied by the railroads on tape produced by their own computers.

The Federal Aviation Agency prepares nationwide summaries and detailed reports of significant aircraft mechanical

failures and malfunctions. Through the use of high-speed transmission lines, the input data are fed to and processed through a computer at Oklahoma City, Okla. Resultant reports are distributed by the same fast wires to the FAA air carrier district offices and commercial air lines throughout the country. Another significant contribution to the safety of air traffic is the Federal Aviation Agency's Semi-Automatic Flight Inspection Program. ADP equipment in this program permits the rapid identification and correction of malfunctioning air navigation aids and substantially increases the number of such inspections that can be made.

Business also reaps a benefit from Government use of ADP equipment in the tabulation and publication of census data. The Census Bureau's inquiries—into population, income, consumer-buying intentions, housing starts, production, sales, employment, foreign trade, and a host of other economic matters—produce information of enormous value to businessmen. ADP equipment is enabling the Bureau to broaden the supply of census information and to make it available while it is still timely. For instance, many marketing surveys have relied heavily on the highly detailed data on population, income and housing developed from the tens of millions of items of information collected in the 1960 census. The Bureau completed various parts of that census 6 to 24 months sooner than the one taken in 1950.

One of the most direct ways in which the use of computers benefits the public occurs in the National Driver Register Service. Operated by the Bureau of Public Roads, the Driver Register Service's purpose is to prevent problem drivers from securing a license from one State without disclosing prior loss of driving privileges in another State for drunken driving or involvement in a fatal accident. The Service's central file now contains information on more than 267,000 persons whose driving privileges were suspended or withdrawn. The Bureau conducts a daily search of the file, checking an average of 5,000 to 7,000 names, forwarded by the States, of persons applying for a driver's license. By March 1963, 46 States, 4 Territories and the District of Columbia had agreed to participate in the Service. Discovery of applicants hiding

past offenses and a State's refusal to give them a license helps make the Nation's streets and roads safer. Without ADP equipment, operating the Register Service would be more expensive and slower.

ADP equipment is of major importance in maintaining 6 million Government life insurance policies for veterans. Automation permitted elimination of about 400 jobs at the Veterans Administration's Philadelphia Insurance Center. In the issuance earlier this year of special and accelerated dividend checks to policy holders, this computer-based system saved more than \$1 million in personnel costs, as compared to what the job would have cost on a manual basis. Additional savings are realized in processing the 70 million checks the VA sends each year to veterans and their survivors. (Since 1950, the Veterans Administration has reduced the number of employees required to handle its 6 million policies from 17,000 to 3,000. Continuing improvements in organization, systems and procedures, separate from the shift to computerized operations, has accounted for much of the manpower savings.)

Great economies also accrue to the Treasury, which issues 333 million checks a year, including 162 million checks for the Social Security Administration. By making improvements in its ADP procedures for reconciling checks, the Treasury added annual savings of more than \$100 thousand in fiscal 1962. Exchange of tapes among Treasury, Social Security, and the VA has reduced errors, speeded up issuance of checks, trimmed personnel costs and contributed to the closing of seven regional disbursing offices.

Other Special Uses

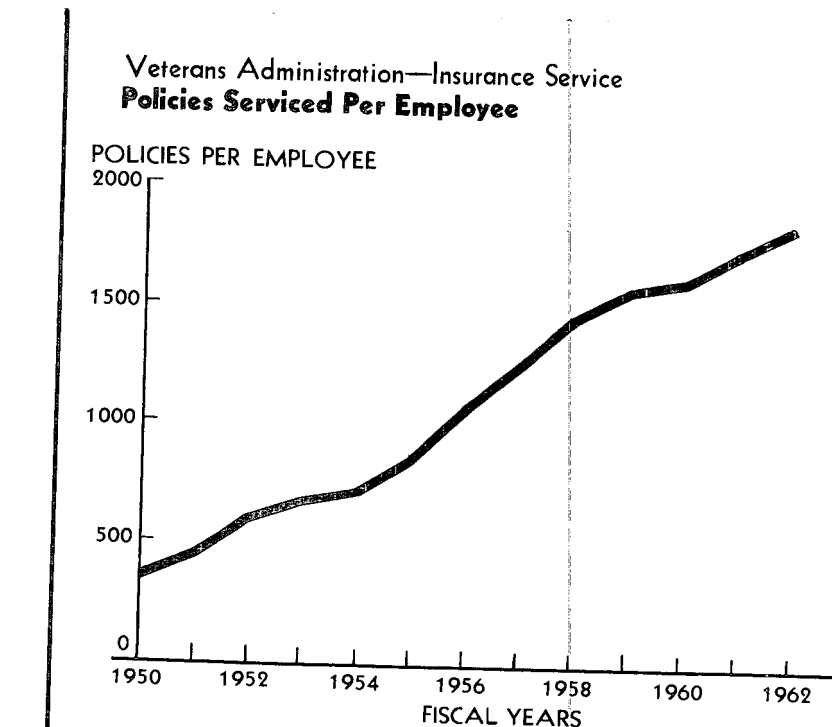
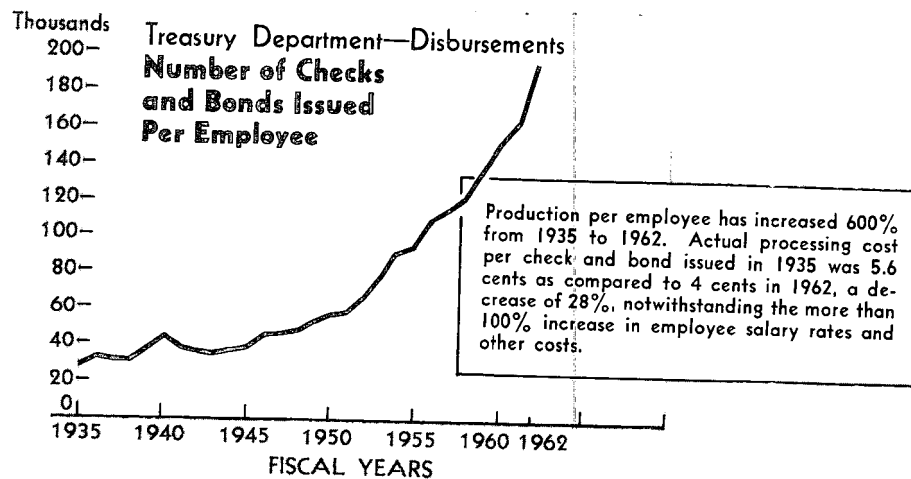
Due to careful planning, ADP equipment is contributing to efficiency and economy in Government in countless other ways: calculating where an astronaut's capsule will land, helping the Pentagon develop plans for combat operations, analyzing the impact of taxes, matching servicemen with job vacancies at overseas bases, predicting electric power demands, expanding the frontiers of science, keeping track of cotton, wheat and grain inventories, helping prepare a multitude of mechan-

ical computations required in the atomic energy program, and many more.

Computers Require Careful Planning

These gains in efficiency, in economy of operations, in better service, do not become available automatically. They are the product of careful planning, of advanced systems design, and of avoiding past mistakes. They are due in large measure to the fact that Government-wide policies and guidelines on ADP equipment utilization are now in existence, and that the competence to distinguish between profitable and unprofitable applications is sufficiently widespread to minimize improper judgments in ADP equipment acquisitions. The once prevalent tendency to glamorize the hardware has been replaced by the more sensible view of hardware as only a tool—a means to the end rather than the end itself; and there are check points at all levels in the executive branch to make sure that "hardware addiction" is a thing of the past.

SELECTED INDICATORS OF PRODUCTIVITY ADVANCES



Policies serviced per employee increased 500 percent from 1950 to 1962. Average number of policies maintained during this 12-year period was over 6 million with a face value of \$40 billion. During that same period, operating costs were reduced from \$9.03 per policy to \$3.88, even though salaries and other costs increased during the period.

HIGHLIGHTS OF MANAGING MANPOWER

Despite such remarkable technological achievements as automation, manpower is, and always will be, indispensable to execution of the Government's responsibilities. People, not machines or procedures, constitute the means for making the Federal Government responsive to the needs of the individual citizen and the Nation as a whole.

The challenge is to make the most effective use of manpower. Many Government agencies have attempted, with a fair degree of success, to pursue this goal through development of tools for measuring workloads, performance, and output. In the process, advances in management technique have come about. A Government-wide assessment of the use of manpower, under the direction of the Bureau of the Budget, is underway. Several notable accomplishments, antedating the new campaign, are worth reciting.

Matching Manpower and Work

Matching manpower with changing workloads and activities—always particularly difficult for organizations with a far-flung network of offices—has been accomplished with the aid of new work planning and measurement tools. Several agencies have developed and perfected systems for breaking down their various operations into standard work units or categories. The number of work units performed and the manpower expended are regularly recorded. These data are the building blocks for program planning, budgeting, scheduling work, deployment of available personnel, and supervision. Among the agencies employing this approach to manpower management are the Social Security Administration, Small Business Administration, Railroad Retirement Board, Post Office Department, Soil Conservation Service, Treasury Department, and the Veterans Administration.

The Internal Revenue Service has applied a work planning and control system to the processing of tax returns and remittances in its district offices. The system's essential elements are a work plan, a work schedule and a work progress report. The results have been better forecasts of workloads, more effective scheduling, streamlining of processing and a general increase in quality of performance. A major benefit: about 175 man-years of work saved in fiscal 1961 and 275 man-years saved in fiscal 1962.

Another agency which has devised a good way of balancing workload and staff is the Soil Conservation Service of the Department of Agriculture. The Service's mission is to help farmers and ranchers determine the best use of their land and to promote conservation practices. The Service's manpower control system provides a clear picture of cost and productivity in 3,400 field offices spread among nearly every county in the Nation. The core of the system is bi-weekly reports from field offices to area supervisors. The reports show how each man has used his time and what each office accomplished during the 2-week period. Area supervisors review the reports in light of what each office is expected to do. They can accept and pass quickly the normal situation and initiate measures to remedy problems. At higher echelons, consolidated reports are studied to spot lagging areas or States, trends in productivity or costs, and needs for program changes.

Results of the Service's time-and-progress reporting system are impressive. For example, acres mapped per man-year increased from 28,006 in 1960 to 30,303 in 1962. This gain of 8.2% in productivity translates into dollar savings of \$278,400—the cost of mapping more than one million acres.

Performance Standards

Several Government agencies have adapted industrial engineering methods, originally designed for factory operations, to administrative, clerical and technical work. In doing so, they have broken new paths in work measurement which have led to economies in money and manpower. A good example is the Manpower Validation Program of the Air Force. Some 600 technicians, working in teams of about 5 men each at Air

SELECTED PERFORMANCE DATA—Soil Conservation Service

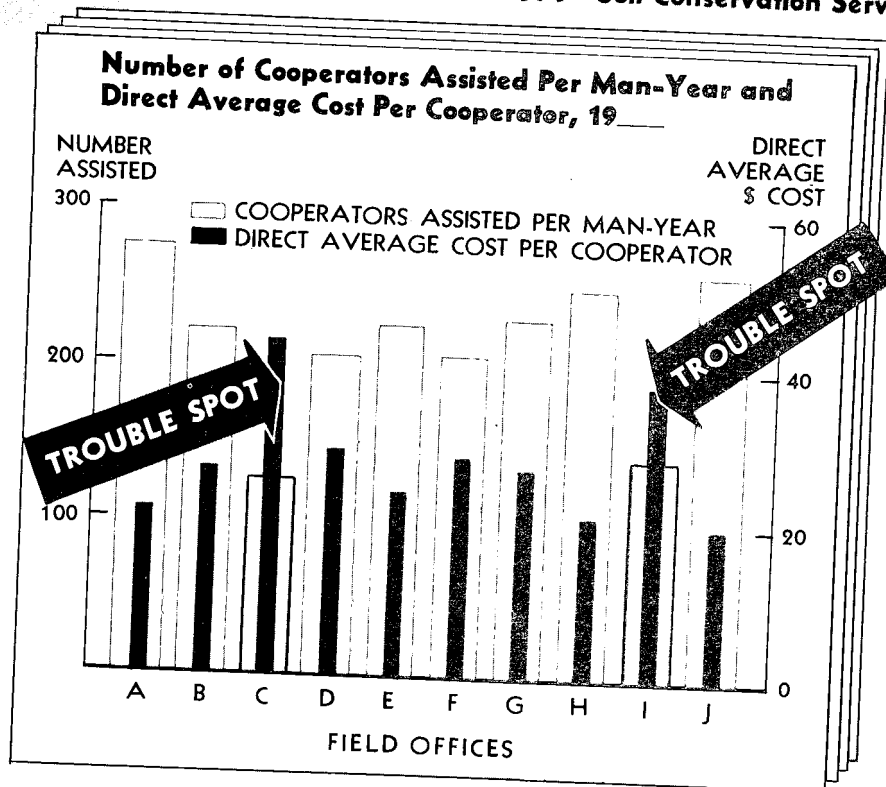


Chart illustrates how selected performance data from Soil Conservation Service field offices are compared to spot situations requiring management attention. In this case the data indicate in field office C and I that the number of landowners and operators serviced is low and the direct dollar cost is high. The causes of the low performance were determined and appropriate action taken. (This chart displays only 2 of some 16 to 30 performance items reported by field offices.)

Force bases around the world, use sampling and related procedures to collect data about man-hours spent on primary work, support work, delays, and personal allowance time (coffee breaks, etc.). This information is used to establish manpower standards for different kinds and volumes of work. So far, about 10% of the Air Force's manpower has been studied. About 5,000 positions were determined to be unnecessary at the activities studied, and were reallocated to meet priority requirements elsewhere in the Air Force.

In the Veterans Administration, the Department of Veterans Benefits has developed a somewhat different approach. This organization which has 15,000 employees in 67 field offices has designed a work sampling technique for setting performance standards. It involves test periods during which employees record their work activities at random times during the day. Self-recording has streamlined and refined the Department's well-established measurement system, which it employs as a key tool for evaluating performance and use of manpower, determining employee training needs, and preparing budgets.

The Navy's Bureau of Supplies and Accounts has taken long strides toward developing performance standards for office and warehousing work. Its Methods Engineering Program uses 150 technicians who develop standards in 18 field installations. The standard for each employee is made known to him so that he is aware of his expected output. For the supervisor, the standard is a tool for balancing man-hours with workload on a daily basis. Management also uses the standards in preparing and controlling budgets. So far, standards have been set for some 9,000 of the Bureau's 28,000 employees. The Bureau is striving to develop performance standards for an additional 3,000 employees by June 1963, and hopes eventually to extend coverage to 80% of its work force.

Engineering of performance standards in the management of Army transportation terminals, begun in 1960, led to improvements in fiscal 1962 estimated at \$550,000. This was a return of \$3.60 for each dollar invested in the program during the year. In fiscal 1961 the return was \$2.54. A key feature of the program is to have work standards for all personnel regardless of type of work involved. That objective is sought by the flexible use of a variety of measurement techniques—the latest in engineered standards (predetermined times, standard data, pace-rated work sampling), as well as statistical analysis and technical estimates.

Pooling Use of Manpower

A somewhat different economy in manpower has been effected by the Public Health Service, the Division of Plant and Animal Quarantine of the Department of Agriculture, the Bureau of Customs, and the Immigration and Naturalization Service. These four agencies are responsible for checking per-

sons, animals, plants, and food entering this country. To perform these functions they are pooling their manpower along the United States—Mexican border. (This is an extension of a dual screening program started by Customs and Immigration a number of years ago.) One inspector asks persons coming across the border questions that formerly were posed by an inspector of each of three or four agencies. Unusual problems outside the inspector's primary area of responsibility are referred to an officer of one of the other three agencies. Not only is the need for border manpower reduced, but the formalities of entering the United States are speeded up for the traveler.

Salary Reform

One of the most important management advances in the manpower field in many years was accomplished in 1962 by the executive branch and the Congress. The Federal Salary Reform Act of 1962, proposed by the President, goes to the heart of the most critical Federal manpower problem: securing the services of highly competent personnel. Unduly low salaries at certain levels and defects in the Federal salary structure had weakened the Government's ability to attract and keep first-rate men and women.

The 1962 act embodies the principle of pay levels for Federal employees comparable with the national average of salary levels in private enterprise. By adhering to the principle of equal pay for equal work, with differences commensurate with differences in responsibility and performance, the act established realistic and appropriate salary levels both within and among the several statutory pay systems and each of their grade levels. It provides for administrative discretion to raise salary rates when necessary to compete more evenly with private industry for scarce skills. It permits salary increases to reward exceptional performance. Finally, looking to the future, it authorizes executive branch machinery for an annual review and report to Congress on the relationship of Federal salaries to those in private enterprise and recommendations for adjustments in Federal pay. Although the act did not apply the new Federal compensation policy to upper career grades, Presidential appointees, and other top executives, it did lay a sound foundation for further improvements.

INCENTIVE AWARDS

A rich source of ideas for economies and greater efficiency in the Government is its own staff. Cognizant of this, Federal agencies are taking vigorous action to make their employees cost-conscious and alert to the possibility of doing the job faster, more cheaply, less arduously, or better in some other way. Begun during World War II, an incentive awards program is now in effect throughout the Government, serving to mobilize the energy and brainpower of Federal employees in all types of jobs and at all pay levels. Cash and honorary awards, authorized by Congress in the Employees Incentive Awards Act, help motivate Government employees to come up with ideas for cutting costs and raising quality, and to strive for excellence in their own work.

The spirit of the incentive awards program was well expressed by James L. Harrison, the Public Printer, who is in charge of the Government Printing Office. "The best suggestions have not yet been written," he declared in a letter inviting GPO employees to participate in the incentive awards program. Mr. Harrison's letter, dated May 4, 1961, is worth quoting at some length as a cogent expression of the spirit and potential of the program. He wrote in part:

" . . . The Government has scarcely begun to tap the wonderful resources available to it by encouraging and adopting suggestions growing out of the knowledge and experience of its workers. The best suggestions have not yet been written.

"I know that each of you, being closer to the work you perform than anyone else, can tell whether there is a better way to do it—a less expensive way, a more efficient way—a way, even, that may make your work easier for you. Please take a good look at the operations going on around you and submit your suggestions for improved methods and procedures that might eliminate waste of time, effort or material . . ."



Worn collars on the gas cylinders shown above used to cause scrapping of the entire cylinder. At the suggestion of a warehouseman and a stockman at the Mare Island Shipyard, the cylinder supplier now replaces worn collars at a nominal cost. Result: a saving in the supply budget of \$11,000 a year.

As a result of Mr. Harrison's personal interest and the energetic follow-up by GPO supervisors, the rate of awards in the Printing Office for adopted ideas nearly tripled in a single year—from 2.3 per 100 employees in fiscal year 1961 to 6.7 in fiscal 1962. Recognition for superior job performance rose from 2 awards per 100 employees to 3.1 in the same period.

Other agencies made similar appeals to their work forces. The results are impressive. In fiscal 1962, Government agencies adopted 104,545 employees' ideas. Measurable savings as a result of accepted suggestions from civilian employees alone came to nearly \$65 million. Cash awards averaged \$40 per employee, or nearly \$3 million in all.

In addition, 76,029 employees received awards averaging \$149 each for excellence of performance. The measurable benefits of their superior work were estimated at \$71.5 million.

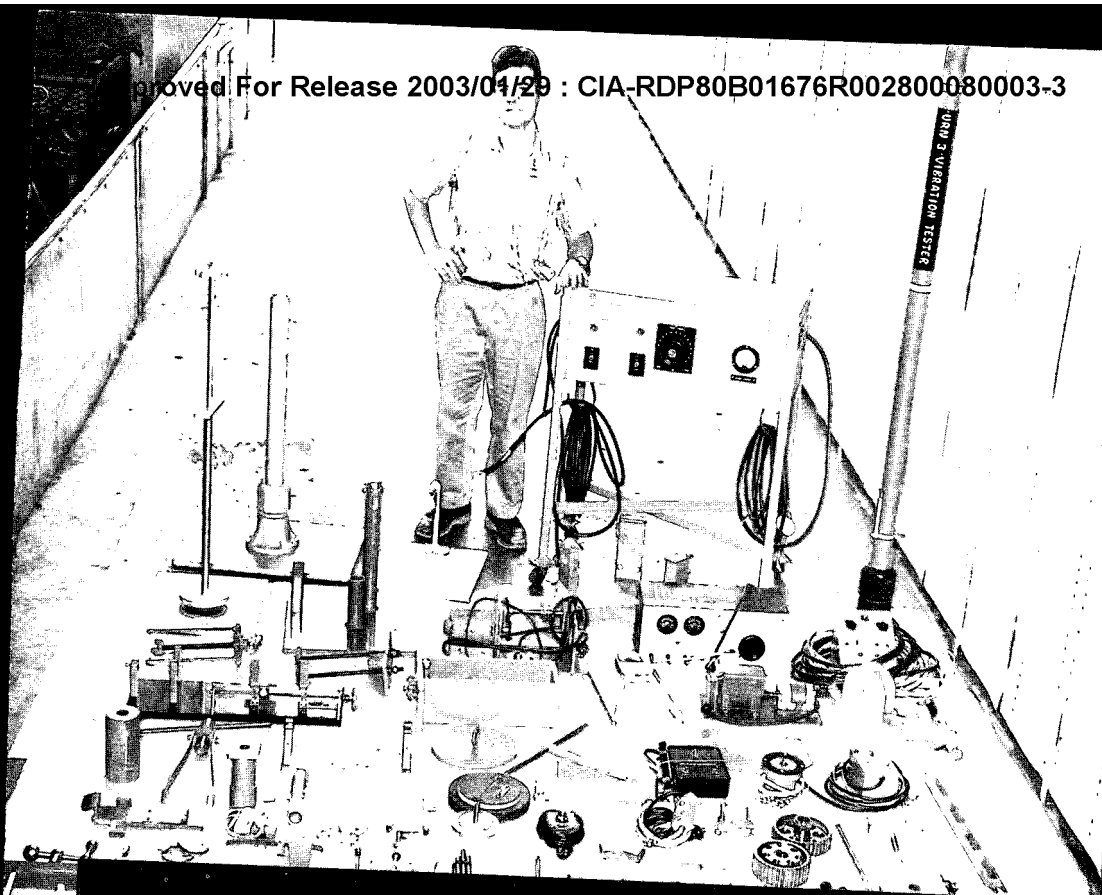
The Air Force Program

One of the most effective incentive awards programs in the Government has been mounted by the Air Force. Much of the credit owes to the high level of management interest and the excellent support of personnel officers. In fiscal 1962, the Air Force improved on an already outstanding record by posting a 12% increase in useful ideas and a 64% increase in measurable benefits. The number of ideas adopted rose to a service-wide total of 33,245, or 2.7 per 100 employees. Savings and benefits to the Government totaled \$84,770,448—the cost of 42 Atlas long-range missiles.

One of the many suggestions from Air Force employees was the \$1 million idea of a quality control inspector at Tinker Air Force Base in Oklahoma. A component of the landing gear of KC-135 jet tankers known as the "trunnion support" had to be subjected to several hours of heating at 600-degree temperatures to strengthen its resistance to stress. But it was found that the supports were warping during the heat treatment and had to be discarded. Each support cost \$2,480 and more than 400 of them required heat treatments.

The quality control inspector had a hunch that the supports were warping because of variations in their thickness. He found they ranged from $\frac{3}{8}$ of an inch to $3\frac{3}{4}$ inches at their thickest part. The warping was occurring in the thin areas, which were absorbing too much heat. To protect them, the inspector designed special steel bars which could be conveniently attached to the trunnion supports during the heating. They did the trick. With them attached, not a single support warped. The Air Force estimates it saved \$1,035,910 by not having to buy new supports.

At Kelly Air Force Base, Texas, an equipment specialist came up with an even simpler solution to a problem. Dehumidifiers in the air cooling equipment of the B-58 jet bomber were being thrown out after they had soaked up a certain amount of moisture. The specialist suggested that the dehumidifiers be baked in an oven to drive off the moisture and make them reusable. The baking worked. The Air Force estimates its saving in the cost of new dehumidifiers at \$13,397 a year.



Outstanding Suggestor. Electronics Mechanic Gerd E. Engles stands among some of his 250 adopted suggestions. Most were his own ideas alone, some were submitted with a cosuggestor. The bulk of his 250 adopted improvement ideas consists of tools, jigs, and fixtures which save time in assembling and disassembling equipment. Mr. Engles, employed at the San Francisco Naval Shipyard, has received \$3,880 in awards. His suggestions have resulted in savings estimated at more than \$72,000.

Special Drive by the Federal Aviation Agency

Unusual success also has been achieved by the Federal Aviation Agency. A drive launched in March 1962 by Administrator Najeeb E. Halaby—with special prizes for the ideas which led to the greatest economies—produced 6,000 employee suggestions. About 1 in five, or more than 1,000 in all, was adopted. Measurable benefits approximated \$750,000.

An FAA aircraft pilot and an electronic technician shared the \$1,000 top award. They proposed a set of standardized charts describing aircraft maneuvers used to test instrument landing systems. Use of these charts frees pilots from having to explain each maneuver by radio to air traffic controllers during the test. The FAA estimates the charts alone will

save flight time that would cost \$57,308 a year. An additional benefit is greater flight safety because air traffic controllers have more time for supervising other aircraft.

Other Employee Achievements

In general, Government employee suggestions and special achievements reflect the ingenuity and alertness on which we Americans pride ourselves. It is possible here to give only a few illustrations:

The Smithsonian Institution needed equipment for rigid control of temperature and humidity for laboratory investigation in the field of radiation biology. To buy the equipment would have cost about \$5,000. The problem came to the attention of a resourceful refrigeration mechanic who works for the Smithsonian. His normal duties are repair and maintenance. By applying superior skill and knowledge, he converted surplus refrigeration equipment at modest cost so that it could meet the laboratory performance standards.

An AEC employee recommended a change in an inspection procedure that would eliminate certain overlapping or duplicating inspections. The inspection involved tests that destroyed samples of the item being inspected. Adoption of the suggestion led to reduction in the number of tests and thus items destroyed, saving more than \$91,000 per year. The employee received \$1,000 for his suggestion.

Man-hours valued at \$9,750 a year are being saved as a result of a constructive suggestion from a woman who repairs parachutes at a Texas Army base. She devised changes in the method of replacing damaged sections of parachutes, cutting sewing machine and fitting time from 90 minutes to 45 minutes per section. The more efficient technique greatly increased production and eliminated a backlog in repair work. An added benefit was that the new method was less fatiguing for the people doing the work.

One of the most valuable employee ideas came from an engineer employed by the Navy's Bureau of Ships. The

Navy's dry-docks were too shallow for new deep-draft vessels, particularly Polaris submarines. There wasn't enough room between the ships' keels and the bottom of the dry-dock to admit the supports necessary before the dry-dock was drained. The only known satisfactory solution was to excavate the floor of the dry-dock to make it deeper. Doing so would be very expensive and would take the dry-dock out of service for months. Although the problem was not part of the engineer's job responsibility, it caught his interest. Why not, he suggested, pump in additional water, raising a ship much the way it is raised in a lock canal? Then there would be enough room to insert supports under the keel. The Navy adopted the idea. It saved \$5,329,325 it otherwise would have spent to excavate two dry-dock bottoms, maintenance of the ships being indispensable. The Navy engineer reaped an extra, personal benefit. The invention was patented, the engineer receiving the commercial rights. The Government received the license for Federal use. A big shipyard already has negotiated a contract with the engineer for use of his invention.

PROPERTY AND SUPPLY MANAGEMENT

With the Government spending about \$30 billion a year to buy property, equipment and supplies and owning \$59 billion of real property and \$149 billion in supplies and equipment, property and supply management is a vein of potential savings well worth working.

This work is going on in all agencies with particular emphasis in the Defense Department and the General Services Administration. The Defense Department buys the countless items necessary to equip our military forces and maintains a worldwide chain of tactical, transport, communications, and support bases. GSA buys items in general use in the Government, securing wherever possible the economies of volume and standardization. It has custodial and maintenance responsibility for general purpose real properties, transferring them, including defense properties, from agencies which no longer need them to others that do, buying or renting new ones as necessary, and selling those which are surplus to the Government's needs.

In essence, property and supply management is concerned with reducing procurement expenditures and holding down the cost of maintaining the Government's inventory of property, which ranges from warships to mop handles and real estate. Economies have been achieved in a number of different ways.

Competitive Procurement

Sometimes the highly complex or advanced nature of a product makes it impossible to put it out for competitive procurement and it is bought from a sole supplier. But recent Defense Department studies have shown that on occasions the Department was obliged to deal with a single supplier because



TALOS FINS

SOLE SOURCE

UNIT PRICE.....	\$1,998.99
COMPETITIVE PROCUREMENT.....	\$1,360.00

SAVINGS

UNIT PRICE.....	\$638.99
TOTAL, 420 UNITS.....	\$268,375.80
NUMBER OF PROPOSALS RECEIVED.....	5

By early development of specifications permitting competitive procurement, the Navy saved 32% on purchase of fins for Talos, an anti-aircraft missile carried on warships.

of failure to take the preliminary steps necessary, or to take them early enough, to permit competitive procurement.

In the past 2 years, the Army, Navy, and Air Force have established procedures for developing, where feasible, the necessary drawings and specifications early enough to make competitive procurement possible when a new weapon or other item reaches the production stage. As a result, procurement costs of items converted to competitive procurement have been reduced roughly 25% both for original items and also for replacement parts. The Defense Department estimates that in fiscal 1962 conversions to competitive procurement reduced costs by \$190 million.

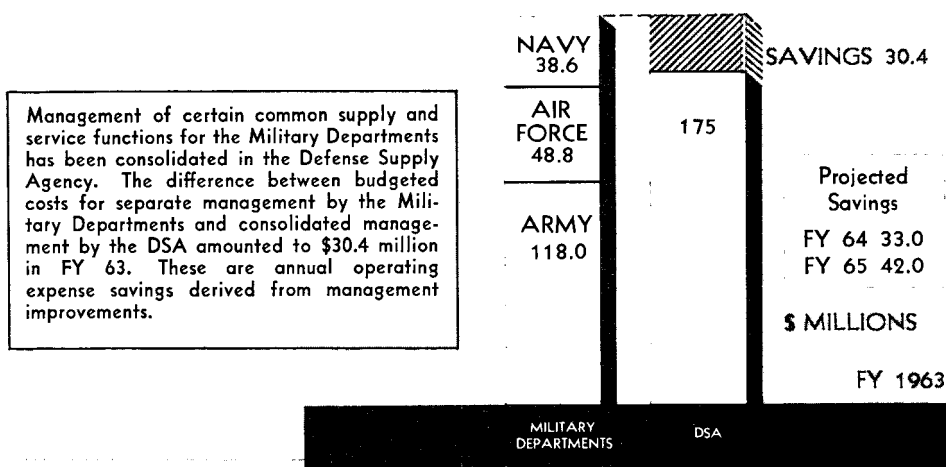
The economies achieved as a result of the shift to competitive procurement stand out more dramatically for individual items. The Army's AN/GRC-19 radio is mounted on vehicles for use by combat units in battle. By switching to competitive procurement, the Army saved \$3,295,400 on a recent order, or 46% of potential cost at prior, sole-supplier prices. Similarly, the Navy saved \$268,400 or 32% on the purchase of fins for the Talos, an anti-aircraft missile carried on warships. And the Air Force, with only 3 firms entering bids, reduced costs by \$9,108,700, or 38%, in buying motor controls for the KC-135 jet tanker, used in air-to-air refueling of long-range bombers.

Defense Supply Agency

In November 1961, the Secretary of Defense created the Defense Supply Agency to take over from the military departments the management of common supply and service activities in the continental United States. Substantial economies are being realized from consolidated management of these activities. In fiscal 1963, substitution of the Defense Supply Agency for separate supply organizations in the three services will yield economies of \$30.4 million. In fiscal 1964 it is expected that \$33 million will be saved. Over the 2-year period more than 4,000 civilian jobs in the defense establishment will be eliminated.

The Defense Supply Agency is now managing a \$2.2 billion inventory consisting of nine major categories of materiel:

BUDGETED OPERATING COSTS FOR MANAGEMENT OF COMMON SUPPLIES Military Departments and DSA



petroleum, food, clothing, medical, general, industrial, construction, automotive, and electronics. Some of these stocks can be cut back through better inventory management, and DSA is striving for a \$215 million reduction in inventory in the current year. DSA also mechanically screens all excess stock of the three services to assure maximum utilization of such stock within the Defense Department. Through such transfers, the military services expect to raise the re-use level of \$956 million in fiscal 1961 to \$1.14 billion in the current fiscal year.

Creation of DSA has given greater emphasis to what has been a continuing Defense Department effort to reduce the number of items bought and stocked. Elimination of items yields savings in procurement and inventory handling and maintenance costs. In the first 3 months of this fiscal year, DSA identified 8,496 items which would be dropped from inventory when current stocks were depleted. By the end of the year, DSA expected the number of items to be dropped would be 27,000. Their elimination was expected to save the Government possibly as much as \$1 million a year. The agency also began a new program to see that any of the Department's \$12 billion inventory of production equipment (boring, mill-

ing, and welding machines, etc.) which became idle would be put to active use.

The Defense Supply Agency, in addition, administers Defense-wide programs for coordinated procurement, cataloging, materiel use, and surplus personal property disposal, and operates the Defense Traffic Management Service and Defense Logistics Service Center. The agency has also become the principal Defense office to work out more effective relationships in its sphere of operations with the General Services Administration, the principal civilian agency in this field.

Value Engineering

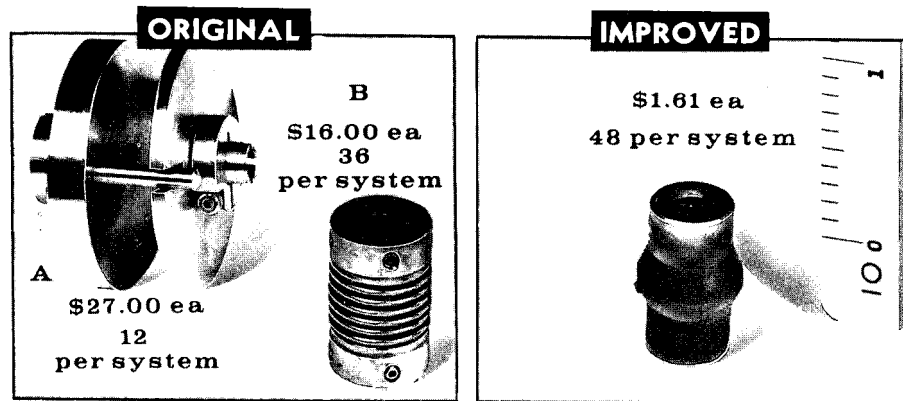
In developing the new weapons and equipment our modern age requires for the military forces, it sometimes happens that an item becomes fancier or more capable than it needs to be to do its job. The Secretary of Defense has directed that every effort be made to remove or change anything in an item that will reduce its cost while not impairing its essential function.

One way to do so is "value engineering." Begun more than 2 years ago by several military procurement agencies, value engineering is the systematic effort by the Department of Defense and private contractors to find and eliminate superfluties in defense weapons and equipment. Companies doing business with the Department are given an incentive to perform value engineering studies by contract provisions which normally assure they will receive at least 50% of any savings they come up with. The Government, of course, gets the balance of the savings under the contract and all of the cost reduction on future orders. Contractors are urged to eliminate or modify excessive requirements in design, components, materials, processing of materials, tolerances, testing requirements and procedures, and packaging requirements.

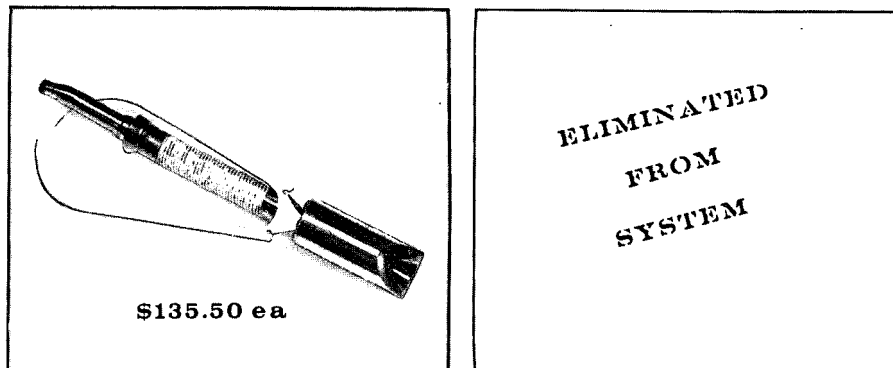
Value engineering has produced savings such as the following:

- Complete elimination of a \$725 electronic testing device used to test antisubmarine warfare equipment. Analysis showed the tests could be performed without the device.

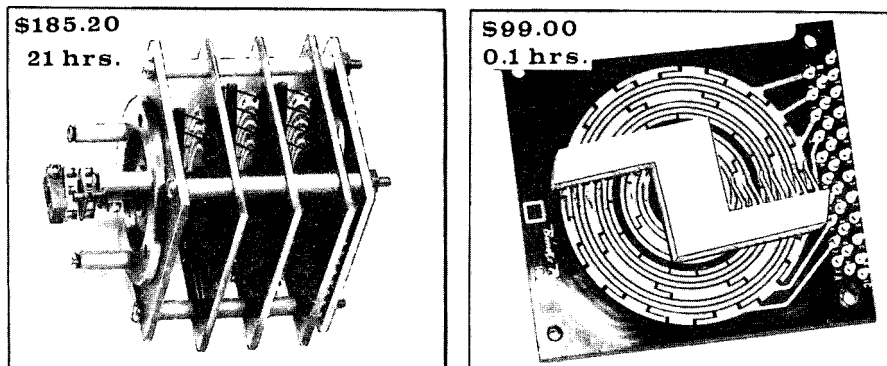
EXAMPLES OF VALUE ENGINEERING RESULTS



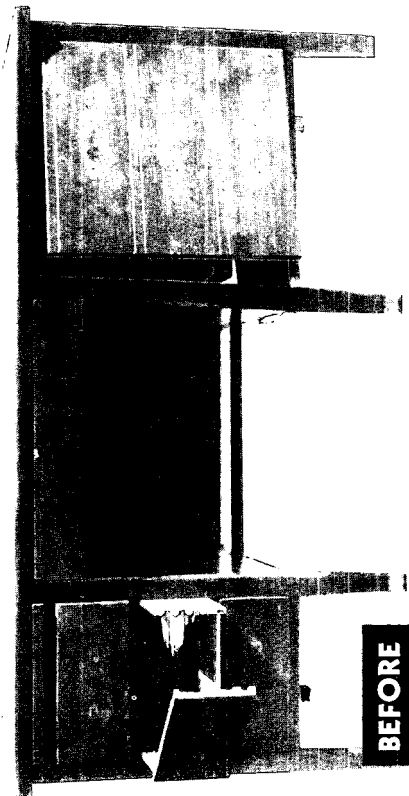
Couplings for Talos Radar Test Set. Review of requirements resulted in use of one simple type instead of two different types more complex in nature. Cost reduction \$827.52 per system, or 86 percent.



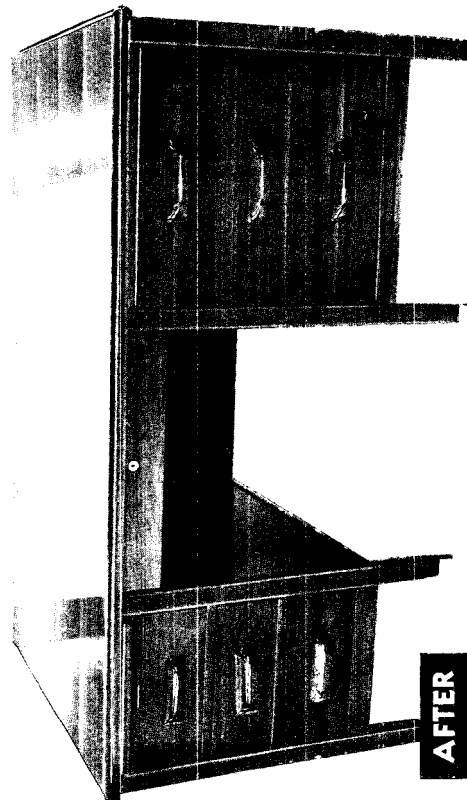
Fuel and Acid Pickups used in conjunction with the KD2B-1 Target Missile were eliminated after tests proved that fuel and acid flow could be maintained in flight with the lines terminated at scientifically calculated fixed points in the tanks. Cost reduction \$115,200 FY 1963.



Rotary Switch for Ranging-Detecting Set, Sonar AN/AQS-10. The original switch consisting of 3 printed circuit boards and 167 pieces was difficult to make, assemble, and adjust. The redesigned switch has only one printed circuit board and 10 pieces. Cost reduction \$86.20 per switch.



PRICE NEW (APPROX.)	\$106.00
REHABILITATION COST (APPROX.)	45.00
SAVINGS	\$61.00



**OFFICE DESK RESTORED
UNDER GSA'S
PROPERTY REHABILITATION
PROGRAM**

- An 88% reduction in the cost of capacitors for the Terrier surface-to-air missile. The old and new prices: \$73.96 and \$8.54.
- An 88% reduction in the cost of cooling equipment for the electronics system of the Navy's Crusader fighter plane. The old and new prices: \$1,243 and \$142.
- A cut of 93%, from \$2.95 to \$0.20, in the cost of a component for Polaris missile fire-control equipment.
- Reduction in the price of the fuse board for the Nike-Hercules antiaircraft missile from \$59.20 to \$12, a 79% saving.

The Defense Department expects that value engineering will produce \$64 million of economies in the current fiscal year.

Property Use and Disposal

Use of excess property and disposal of surplus property are other areas in which the Government, by better management and study of alternative uses and costs, is finding significant economies. Property is "excess" when the agency which has it no longer needs it and "surplus" when no other Government agency needs it.

The use of excess property to meet some of the requirements of old as well as new and expanded Federal programs—including our efforts in outer space and scientific research—has resulted in significant savings for the taxpayers. Hence, GSA has intensified its efforts to find new uses for excess property. In May 1961, for example, the National Aeronautics and Space Administration, preparing for the task of landing men on the moon, took over the Army's Michoud Ordnance Plant in New Orleans, which originally cost \$37.6 million. Similarly, an airfield at Shemya, Alaska, which cost \$23.1 million, was transferred from the Federal Aviation Agency to the Defense Department.

GSA's efforts in the utilization and disposal of property have been facilitated by a reorganization which combined previously scattered functions into a single organization, the Utilization and Disposal Service. This consolidation has led to accelerated disposal of surplus property, increases in taxable real estate for States and communities and additional sales proceeds to the Federal Treasury.

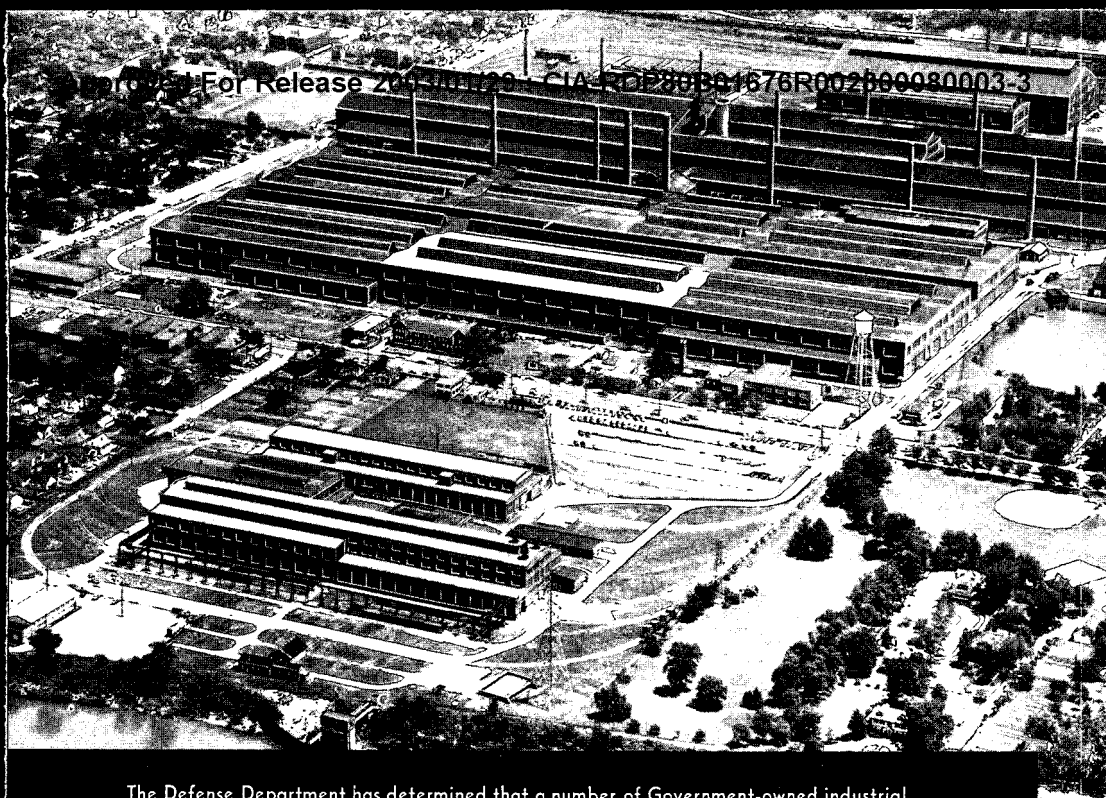
In selling surplus real property, GSA tries to find buyers who will use the property promptly, thereby creating jobs and income for the community. In calendar year 1962, 26 such disposals were made. When the 26 plants are converted to commercial production, it is expected they will employ some 27,000 people with an annual payroll of about \$189 million. In fiscal 1962, proceeds from the sale of surplus real property were \$78.9 million, compared to \$71.6 million for fiscal 1961. The 1962 proceeds exceeded appraised valuation by 10%.

GSA also handles transfer and disposal of excess and surplus personal property (as distinguished from real estate), such as furniture, automotive and construction equipment, office machines, etc. In fiscal 1962 it arranged for transfer among Government agencies of \$362 million (at acquisition cost) of personal property, a new high and a gain of 17% from fiscal 1961.

Greater attention by GSA in recent years to rehabilitation of personal property has saved the Government money. GSA has contracts with 80 commercial firms for repair and restoration of such items as desks, chairs, and filing cabinets. In fiscal 1961, rehabilitation saved \$10.1 million; in fiscal 1962, savings were \$16.8 million.

In February 1961, the Defense Department began an intensive review of its installations around the world to determine which could be reduced or closed. These studies involved detailed on-the-spot inspection by experts. As of December 31, 1962, decisions had been made to reduce or close installations which will enable the Department, when these actions are completed, to reassign or drop from its payroll 44,923 employees. Savings in operating, maintenance, and military personnel costs are expected to amount to an estimated \$270.4 million.

The study showed the Department no longer needed 45 Government-owned industrial facilities operated by private contractors. GSA was advised that the plants were excess to Department needs. GSA has found other uses in the Government for three of them. One is scheduled for transfer for educational purposes to a local community. Six have been




The Defense Department has determined that a number of Government-owned industrial facilities are no longer needed. The plant pictured above is one of those which has been sold for commercial industrial use, creating jobs and income for a community. A former Naval Ordnance Plant at South Charleston, W. Va., the plant has been converted to the manufacture of aluminum and steel personnel carriers.

sold. The others will be sold to private buyers or assigned to State or local governments for selected public purposes.

Motor Pools

Ten inter-agency motor pools were established during fiscal years 1961 and 1962, bringing the total in the United States and Puerto Rico to 66. In 1962, employees of the participating agencies rode about 250 million miles in pool cars at an average cost of 7.6 cents per mile. When each agency was operating its own vehicles the average cost was 10.78 cents per mile. In 1962, alone, pooling saved the Government about \$8.2 million. Additional savings are being realized from motor pool management studies and the issuance of guides on maintenance and on the use of manufacturer's warranty.

THE ECONOMIC ORDER QUANTITY-- AN ILLUSTRATION



NUMBER OF ORDERS	VALUE OF EACH ORDER	VALUE OF INVENTORY	CARRYING COSTS	PROCUREMENT COSTS	TOTAL COSTS
1	\$1600	\$800	\$80	\$5	\$85
2	800	400	40	10	50
3	533	267	27	15	42
4	400	200	20	20	40
5	320	160	16	25	41
6	267	133	13	30	43

CARRYING COSTS = 10% OF INVENTORY
PROCUREMENT COSTS = \$5 PER ORDER

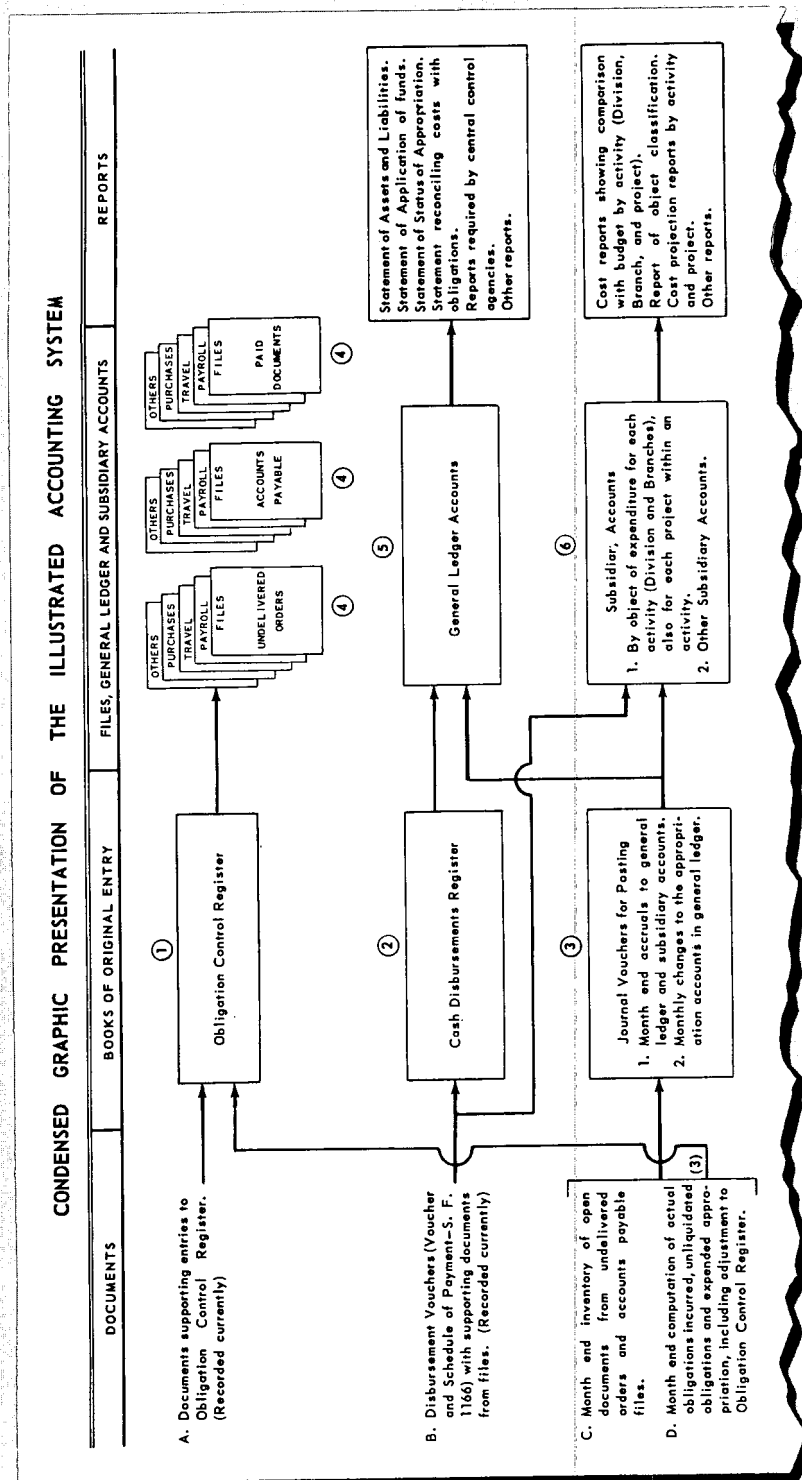
The Economic Order Quantity strikes a balance between the costs related to the size of an inventory and the costs related to the frequency of procurement. In the above example, four orders per year result in the lowest total costs for carrying the inventory and for procuring the supplies.

The Economic Order Quantity

In ordering equipment and supplies, a Government agency (or a private firm) must decide how much it needs for immediate use and how big an inventory it should carry. Maintaining an inventory costs money, and so there is a reason for keeping it as small as possible and still large enough to meet ordinary and perhaps some extraordinary needs. On the other hand, the cost of placing orders for stock replenishment rises as the number of orders increases. The "Economic Order Quantity" is the number of units which balances procurement and inventory carrying costs so that the least total cost results.

In order to carry out the EOQ process, the General Services Administration has devised procedures and issued regulations requiring that each agency establish and maintain such con-

trol of personal property inventories as will assure that the total cost involved will be kept to a minimum consistent with needs. Application of EOQ in various agencies has had considerable effect. For example, introduction of EOQ in operating the Installation and Materiel Depot of the Federal Aviation Agency has resulted in inventory reductions estimated at \$1.9 million, plus a reduction of \$215,000 in annual inventory carrying costs. At that depot the number of procurement actions was reduced by close to 50%. Initial applications of the GSA Economic Order Quantity regulation in Federal agencies in the past 2½ years have resulted in identifying potential economies of more than \$20 million.



FINANCIAL MANAGEMENT

Cutting across all facets of Federal activity is finance—estimating costs of work, obtaining funds from Congress, keeping expenditures within dollar and program limits prescribed by Congress, developing and maintaining financial systems that are responsive to the needs of management. Timely and accurate information on the use of Federal dollars is of major importance to the Government—in both the executive and legislative branches. In the executive branch, two agencies' primary responsibilities concern Federal financial management—the Treasury, whose principal tasks are raising revenues, paying many Government bills, and maintaining central accounts for the Government; and the Bureau of the Budget, whose main job is to look after the effective use of money. The General Accounting Office prescribes accounting principles and standards and independently scrutinizes Federal spending for the Congress.

The Joint Financial Management Improvement Program

These three central agencies have been engaged jointly since 1948 in leading a financial management improvement program. All executive branch agencies participate. One of the major objectives of this program is to create more cost consciousness in managing the tax dollar by developing financial systems that relate costs to work performance. Timely and meaningful information along these lines can assist managers immeasurably in conducting operations more efficiently and economically. Since the start of the program, numerous agencies have revamped their accounting systems and now operate under modern, accrual accounting principles.

Another objective of the joint program is to streamline finance procedures and cut costs involved in accounting operations themselves. Short cuts have been adopted and new

methods have been introduced. Sometimes economies have resulted from alert thinking by employees or supervisors who found ways to eliminate duplication. Large savings have come from using automatic data processing equipment (selected illustrations are in a separate section).

Governmentwide Improvements

Recent actions by the central agencies that have Government-wide effect include the following:

- Adoption by the Treasury Department of a modified central accounting and reporting system eliminating redundant practices in Treasury and other agencies. Savings are estimated at \$125,000 this fiscal year, \$150,000 each year thereafter.
- The Bureau of the Budget directed other agencies to submit quarterly estimates and reports of international transactions. The purpose is two-fold: to obtain Government-wide quarterly projections of Federal expenditures and receipts entering into the U.S. balance of international payments; and to develop agency systems to minimize spending and maximize receipts which affect the balance of payments.
- To assist and guide agencies in setting up acceptable accrual methods of accounting, as required by law, the General Accounting Office has issued an important booklet explaining and illustrating minimum requirements in accounting for assets, liabilities, income, and expenses.
- The Civil Service Commission, with help from the central finance agencies, has run financial training courses for Federal employees since 1958. In 1962 about 700 Federal employees—both operating officials and financial personnel—participated in this training.

Agency Accounting Systems

As a part of the Joint Financial Management Improvement Program, actions have been taken by many agencies which produced significant improvements. Some examples are:

- The Department of State is overhauling its worldwide accounting system. A new account structure has been

put in—to improve estimating, planning and control. Financial operations for Europe and Africa have been centered in Paris, eliminating a need for 22 positions. Another center is being considered for Latin America.

- The Bureau of Public Roads put in an accrual system to keep better track of Federal highway programs. This includes work with State highway organizations to get them to keep accounts in the same terms.
- USIA is improving its accounting to identify better its assets, liabilities, income, and expense. Property values have been determined and recorded as a part of the improved system.
- The Post Office established accounting controls over its widespread property holdings. The cost of all property is recorded at over \$1 billion. As a part of the process of establishing the accounts, excess property of almost \$5 million was identified for disposal. Also, more businesslike identification of costs has been adopted—providing a more accurate base for considering changes in postal rates.

Short-cuts and Streamlining

Minor changes in agency procedures are frequently quite productive in dollar savings. Even though these savings may be small individually, the cumulative effect is significant, as indicated by the following examples:

- The Tennessee Valley Authority obtained annual savings of \$90,000 by centralizing procedural work that supports its payroll operations. By using a 10% sample in auditing vouchers of \$10 or less instead of examining each one, it is saving another \$50,000 each year.
- The Departments of Agriculture and Health, Education, and Welfare are conducting tests on various possibilities of statistical sampling in auditing vouchers. Results to date hold promise for considerable manpower savings on a Government-wide basis.
- The Public Housing Administration allowed small local public housing authorities to combine to sell temporary notes. In the initial application, 17 local authorities

realized joint savings of \$13,000 in interest and advertising costs. Further savings will result from expanded use of this rule. By raising the denomination on all new issues of housing authority bonds from \$1,000 to \$5,000, several million dollars are expected to be saved in printing costs and in the costs of employing fiscal agents to service the bonds to their maturity.

- The Railroad Retirement Board stopped mailing retirement benefit checks to husband and wife separately, now puts both in one envelope. Estimated savings—\$70,000 a year.
- In the Federal Deposit Insurance Corporation, under revised legislation, 28 audit positions were eliminated by adopting simpler methods for computing assessments for insured banks.
- Duplicate accounts were eliminated when the Agency for International Development took over from the Export-Import Bank the complete job of accounting for foreign assistance loans. AID also has transferred to the Department of State its disbursing functions in Latin-America, which has permitted elimination of AID's disbursing officers there.

NEW APPROACHES FOR MANAGING COMPLEX PROGRAMS

Advances in technology since World War II have wrought major changes in military weapons and the support systems, such as communications and fire control, necessary to back them up. The technological explosion has spawned a need for new management techniques but has not automatically generated them. Indeed, management breakthroughs have been harder to come by, as a rule, than technological advances.

The lag in increasing our management skills is a serious problem. Management mistakes and omissions can be costly in terms of men, money, and materials. They can involve the loss of time when time is priceless. Perhaps most significant of all, the new technology—propulsion, release of nuclear energy, remote control, self-correction, new magnitudes of speed and firepower, etc.—forces upon defense planners decisions of awesome complexity. These decisions—the choice of a major weapons system, the mix of striking and defense power, the balance of conventional forces and nuclear capability—are intimately related to our national security.

Need to improve estimates and control

Once the preliminary choices have been made, they must be translated into action economically, quickly, and effectively. Schedule slippages endanger operational readiness plans, generate additional costs and delay related activities, such as reassigning and training troops. These have been real and serious problems for the Department of Defense.

Significant headway in solving or minimizing these problems is being made. Its origins go back a decade—for example, to establishment by the Air Force in the early 1950's of weapons system project offices. More recently, the pace of management improvement in the Department of Defense has acceler-

WHAT A "SYSTEM" IS

1. WEAPON SYSTEM

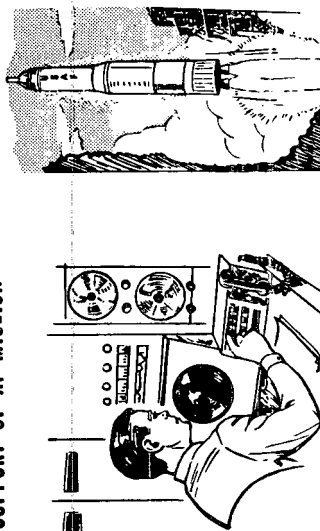
INSTRUMENT OF COMBAT AND
INTENDED OPERATIONAL ENVIRONMENT



EACH HAVING ITS RELATED
FACILITIES
EQUIPMENT
MATERIEL
PERSONNEL
SERVICES

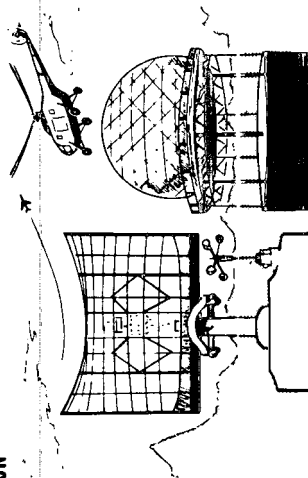
2. SUPPORT SYSTEM

FILLS DEFINITE NEED IN
SUPPORT OF AF MISSION



3. COMMAND & CONTROL SYSTEM

PROVIDES CAPABILITY TO
CONTROL & PERFORM AN AF
MISSION



Selecting a major weapon (equipment) system requires consideration of all costs involved over its life cycle—from development, through acquisition and including operations and maintenance—not just the procurement cost of the weapon alone.

ated. New techniques and tools, such as program definition, incentive contracting, the PERT system for planning and keeping track of development costs and progress, and value engineering,¹ have been developed or elaborated.

Program Planning

The choice of a major weapons system is not only critical and complex, it is expensive. It may involve the use or commitment of a large amount of resources over a long period of time, from the "gleam in the eye" stage to the time when it becomes obsolete. With high cost and high risk, it is crucial that the one best choice be made from the possibilities available. This requires a choice in relation to the mission to be achieved, the total resources likely to be required for the acquisition and support of the weapons system during its entire life cycle, and the trade-off value possible in terms of contributing to different missions. For example, how much would a dozen additional land-based ballistic missiles and their supporting system cost and what would they contribute to the mission of the Strategic Retaliatory Forces as compared with a given number of additional Polaris submarines?

Until recently, defense planning, which involves planning the number and kind of military forces that will be required, including their weapons, was not tied into the budget process. In addition, the traditional budgetary categories, e.g., personnel, construction, procurement, etc., did not focus on the key choices of major concern to top management, i.e., costly weapons systems.

Extending horizons

To put decision-making on a more rational basis, and thereby to avoid if possible decisions which will have to be reversed after considerable investment of money and manpower, the Department of Defense has broadened its horizons. It has begun projecting its force requirements (weapons and troops) 8 years ahead and its money and manpower needs 5 years ahead. It has developed a mission-oriented programing sys-

¹ Value engineering is described in the section of this report on Property and Supply Management.

tem as a framework for analyzing and selecting from among alternative weapons and equipment systems. Once a program choice is made it is translated back into the more traditional budget categories in which the appropriations process is cast.

The system now in effect enables Defense Department top management to make decisions in the broadest possible perspective—one that shows their ultimate costs and long-range implications.

Program Definition

Program definition is the process, just prior to full development, of specifying the performance, schedule, and cost of a proposed system in order that major decisions and contracts may be based on the improved understanding of the job to be done. It brings to light before the development commitment is made choices that must be resolved about expenditures, performance, design, durability, trade-offs, and other aspects of the final product. It permits the use of incentive-type development contracts and should result in considerable economies, more reliable cost estimates and schedules, closer working relationships with contractors, and a more informed and competitive selection of a contractor.

More precise designs

Program definition was first tried experimentally in development of the Air Force's Titan III standardized space booster. The original development plan, drawn up in the traditional way, outlined a \$500 million program, a proposed schedule, and technical features. Titan III in essence was to employ new solid rocket boosters with a Titan II core and an Agena D upper stage, the latter two having already been developed.

The Secretary of Defense believed that development should not be approved until the system was more closely defined. Two manufacturers who were the prime contractors for Titan II were given funds to help the Air Force elaborate its design and plans. As a result of more precise program definition, it was determined that the Agena D could not be used as originally thought and a new upper stage would be required. This and other changes necessitated new and additional development costs raising the total estimate to \$800 million.

With this more accurate information in hand, the Department was able to reassess the Titan III's probable benefits in light of the new cost figure—before a decision was made to go forward and before large and unexpected sums had been spent on development. The increased specificity of design made it possible to plan and negotiate an effective system of development contract incentives.

Can reduce costs

Another pilot test of program definition proved of considerable value in contract negotiation for the Army's Lance missile. The Lance is a ground-to-ground tactical weapon designed to be used by combat troops. Of eight firms which submitted bids for program definition and subsequent development, two were selected and given \$500,000 each for the program definition phase. At the end of 60 days, the two companies submitted program definitions and proposals for development and production.

Among the specific results of the Lance program definition phase were the drawing up of detailed specifications for major assemblies and subassemblies before final award of the development contract, resolution of important technical problems, and realization of significant economies. The cost of propulsion development was trimmed from the original estimate of \$35 million to about \$25 million. The estimated cost of each Lance missile was reduced by more than one-third. This latter saving, in light of the considerable inventory of missiles planned, adds up to a large sum. In addition, management relationships were established before the contract was awarded, paving the way to close coordination in the principal development effort and faster resolution of problems that might arise. Finally, for the \$1 million spent on the program definition phase, the Government received technical advice worth several times as much from the competing companies.

"PERT"

Once in the development stage, a project proceeds on many fronts at once. If it is development of a big, complex piece of "hardware", like a missile or submarine, hundreds of con-

PERT's Horizon Beginning to Widen

Proven in Polaris program, concept which now includes cost measurement may be used on full weapon/space

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CRITICAL PATH SCHEDULE

PLANNET CAN HELP PERT

by Nathan H. Ranck and Ronald O. Farr,
Industrial Engineers, GMRD, Pan American World Airways

PERT

where additional resources can be applied to expedite the process. "slack" indicates where available resources (manpower, equipment) may be found.

Thus PERT disciplines the manager to do rigorously what he would do anyway if he is to discharge his management responsibilities. It

PLANNING NETWORK (PLANNET) is Pan American World Airway's custom-made management tool for measuring progress in the Guided Missile Range Div.'s projects. It can be used as an aid to PERT, because it is time oriented. PERT is not. It corrects this basic weakness in today's most talked-about management aid.

HERE'S HOW PLANNET WORKS . . .

►Pan Am's management control system for the Range is a "hand-in-glove" relationship to PERT.

major difference between the Range Div., Pan American World Airways, has its own PERT system for direct reference.

Called PLANNET, the system means for developing schedules, and program progress itself for "in-house" PERT vs PLANNET.

First step in PLANNET type

MANAGEMENT

Shortcut for project planning

PERT/Cost is hottest new tool in Space Age research and development

• Program Evaluation Review Technique is the full name of one of the newest, most talked about, and least understood techniques for managing operations.

Technology

human mind, unaided, cannot weigh the complexities of a build-up of products.

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PERT ON THE C-141

Air Force developed and now operates new PERT system with in-house talent. Summary networks and simple briefing format tailored for use of top military management.

With A Success

How to Plan and Control with PERT

T-Milestone System

Applied for all Navy Weapons

program-management tool in use W2F-1, and ARM; Gives work status HERE'S HOW . . .

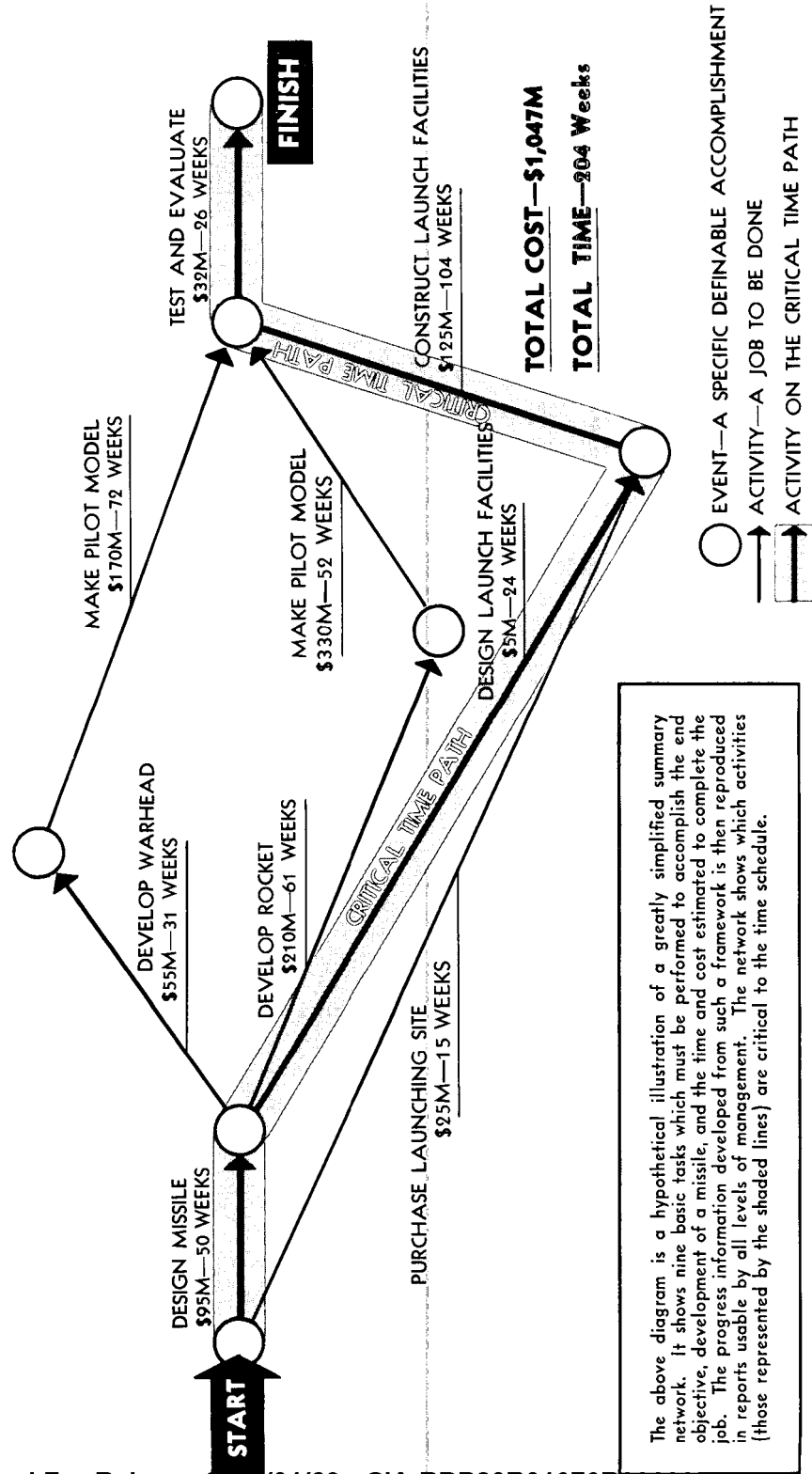
tractors and subcontractors may be involved. One's work may depend on another's, so that delay has repercussions. To keep track of how a project is progressing and to spot delays calling for fast action, a system was devised for the Navy called Program Evaluation and Review Technique, or PERT. The Navy came up with PERT to assist the project manager in scheduling and controlling the many contractors involved in developing the Polaris weapon system.

Since then, the Air Force, Army, the National Aeronautics and Space Administration, and the Atomic Energy Commission have also become extensive users of PERT as an aid in total project management of a nonrepetitive nature. Private enterprise is adopting the PERT technique not only to fulfill Government contracts, but also to manage purely commercial activities. Industry is using PERT for such activities as construction, programing and installing computers, planning maintenance, planning for distribution, and research and development of new products.

The PERT technique may be used to assist management from the inception of a project to its completion. It aids in the initial planning which precedes the decision that a program should proceed; it helps in defining the program in terms of performance, schedules, and costs; and it helps in the detailed planning, control, and evaluation of the project throughout its course.

In concept PERT is simple. It involves four basic steps: (1) breaking down a project into tasks which are significant for planning and control; (2) displaying these tasks in a sequential fashion which graphically illustrates their interrelationships and dependencies (see network illustration); (3) estimating the time and resources required to complete each task or group of tasks; and (4) continually reviewing actual performance versus the estimates in order to readjust schedules, performance, and/or financial plans. PERT can be used in many ways. In some situations, using only the networking technique is useful for planning. Nevertheless, its most significant use has been in connection with large and complex projects involving thousands of activities with serious problems of coordination. In these types of projects, such as those

ILLUSTRATION OF A PERT NETWORK



concerning the development of major weapons and space systems, PERT techniques requiring the use of high-speed computers are utilized.

Controls time and cost

PERT was developed originally to plan and control in terms of meeting time schedules. Last year a successful effort was made by the Department of Defense and the National Aeronautics and Space Administration to expand the technique of PERT to include the planning and control of costs as well as time. Each of the military services is currently using PERT to plan and control both timing and cost on at least one major project on an experimental basis. Lance and Mauler missiles, the TFX supersonic fighter plane, and SubRoc, a submarine-launched, rocket-propelled depth charge, are among the pilot projects. If the technique of employing PERT to control costs and improve original estimates is as successful as it has been in the control of time, an important, powerful, money-saving management tool will have been forged for the use of both Government and industry.

Some specific benefits

The principal value of PERT, both time and cost, is as an aid to improved management. It helps the manager by providing timely information which assists him in making important decisions. The manager himself must take the responsibility and credit for making decisions. Nevertheless, some illustrations of how PERT has been strikingly useful to managers are included below:

Navy.—Has reported an early demonstration of the benefits of PERT/Cost. A contractor reported an \$850,000 cost overrun and requested additional funding. By use of PERT/Cost techniques, it was possible to prune out \$250,000 of nonessential work and classify \$435,000 of the reported overrun as change in contract scope subject to negotiation in which additional savings might be made.

Army.—Has found the networking and scheduling aspects of PERT most useful, especially in construction projects. In one typical case, contractor personnel were scheduled to depart shortly for an isolated Pacific isle

to install radar equipment. A routine PERT analysis indicated that installation of the shielding for the radar room was falling behind. The construction contractor was promptly notified to order the shielding and departure of the radar installation personnel was delayed one month, thereby minimizing schedule slippage and preventing an estimated \$100,000 of extra expense in paying idle contractor personnel.

Air Force.—The scheduling benefits from PERT are illustrated in the C-141 program, the development of a subsonic aircraft. Three contractors all thought they were doing their job in the propulsion area as scheduled and they were complying with the terms of their separate contracts in all respects. When their respective efforts were integrated on an overall network, it became apparent that the propulsion system would be delayed 36 weeks. Network analysis soon discovered the principal problem, that one contractor was waiting for receipt of a production engine from a second contractor before proceeding with design of the engine covering. A metal mockup engine was supplied and constant monitoring of the interdependent effort required by all three contractors reduced the delay from 36 to 8 weeks, representing a substantial reduction in costs.

NASA.—PERT was used by the National Aeronautics and Space Administration to help prepare a feasible approach for a manned lunar landing. It was discovered that the critical item, whose delay would cause most harm to the project schedule, was the acquisition of land for, and construction of, launching sites. This resulted in an early approval to expand the Atlantic Missile Range.

NASA also uses PERT on some of its contracts. In one such case, a major contractor requested overtime authorization on a number of specific tasks. PERT reports permitted the NASA Project Manager to discover that some of the tasks had already been completed and the remainder were in areas where there was no need for rush work. The request was denied.

AEC.—Besides using PERT for controlling research and development projects and construction work, the Atomic Energy Commission has applied the technique to other kinds of problems. One such application is at the National Reactor Testing Station in Idaho. Through PERT the shut down times on 2 different test reactors were reduced from 10 to 15 percent, saving an estimated \$3,000 every 4 weeks on one reactor, and \$14,500 every 6 weeks on the other. In addition, better management control, improved quality of workmanship, better utilization of manpower, and a reduction in radiation exposure of craftsmen is achieved. Another unique use of PERT was in planning and administering the transfer of the Los Alamos, N. Mex. community from Government to private ownership. Still another unusual use is for the maintenance work on the huge gaseous diffusion plants at Oak Ridge, Tenn.

STATISTICS REPORTING AND USE

The Government regularly collects and publishes many statistics. The purpose of doing so is twofold: (1) to keep track of progress and problems in many sectors of our national life, so that Government policy-making can take account of the country's needs; and (2) to make available to farmers, businessmen, economists, teachers, public health specialists, and other citizens the information they need to do a better job in their own work.

Reducing the Reporting Burden

In collecting data, it behooves Government agencies to minimize the reporting burden imposed on the individuals, firms, and institutions who respond and to avoid unnecessary duplication of effort. Accordingly, more and more attention is being given to designing surveys to satisfy the statistical needs of more than one agency. The National Science Foundation, for example, included in a mail survey of scientists questions of interest to the Bureau of Labor Statistics, Office of Education, National Institutes of Health, and the Veterans Administration. The Bureau of Old-Age and Survivors Insurance added to a survey it was making questions proposed by the Veterans Administration. Incorporating the VA's questions added 3 months to the time necessary to complete the survey and increased the cost by about 25%. But a separate inquiry by the VA to get the information it needed would have meant an increase of perhaps 100%.

In the Defense Department, progress has been made in easing the burden of statistical reporting, both for Department offices and private contractors. After new criteria for statistical reporting were established, 123 recurring reporting requirements of the Office of the Secretary of Defense were reviewed. To date, it has been decided to retain 83, cancel 9, and simplify

or eliminate 15 in the future. Decisions on 16 others are pending. Meanwhile, 5 large-scale reports totaling 20 sections submitted by manufacturers have been consolidated into a single standard reporting system of 4 sections known as the Defense Contractors Planning Report. It will be used by all three military services.

The Advisory Council on Federal Reports

Development of a high degree of cooperation between business and Government in the conduct of the Government's information and statistics gathering program has been achieved through the Advisory Council on Federal Reports, which advises the Bureau of the Budget. It provides a channel for obtaining information and advice about business record-keeping practices and the drafting of questionnaires, definitions, and instructions so that they will be interpreted the same way by everyone and so that accurate information can be supplied quickly with a minimum of burden. But the payoff is more than these intangibles. In a recent case involving a Census Bureau survey of the origin of exports, industry representatives estimated that they were saved \$5 million in the cost of filing the reports as a result of changes which they recommended and which the Bureau accepted.

Getting More Out of Statistics

Increased attention is being given to deriving statistical byproducts from information on hand. The Internal Revenue Service has compiled several highly useful statistical series from data on income tax returns. It recently began publishing, for instance, an annual statistical profile of the financial position of unincorporated businesses, with considerable breakdown by industries. Extraction of information on tax returns also has yielded highly significant data on the age, type, and cost of production facilities in the United States.

The Census Bureau has developed plans for making significant analyses of the structure and growth of U.S. manufacturing industries without collecting additional information. This will be done by utilizing individual plant reports which have been collected over a period of years, principally in the

Annual Surveys of Manufactures and in the Census of Manufactures taken every 5 years. These provide information on key items such as employment, man-hours, payroll, cost of materials consumed, use of energy and fuel, capital investment, depreciation, value of production, and value added by manufacture. Up to now the reports have simply been tabulated to present cross sectional snapshots of various industries. Now data covering each plant are being assembled for the period 1954 to 1961. This will make it possible to analyze trends, changes over time for individual plants, and differences between plants and between industries. Such analyses promise to shed much more light on what is happening to the growth and structure of industries, and how growth occurs, than has been obtained previously. Needless to say, the job of assembling and utilizing such a great mass of data on hand is greatly facilitated by the use of automatic data processing equipment. Indeed, the job would not have been feasible at all using older, tabulating machinery.

Testing a New Census Approach

Sometimes it costs money to save money. It may even be uncertain that the initial outlay will pay dividends. But the risk is worth it where the payoff would be much greater than the initial outlay. A case in point is the Census Bureau's proposed test to determine the feasibility of establishing an address register for a major part of the population. Such a register would permit the 1970 census of the population to be conducted primarily by mail. The cost of the test is estimated at \$1.5 million. The saving that would be realized if the 1970 census could be and were conducted largely by mail is projected at \$15 million.

MANAGEMENT OF FIELD ACTIVITIES

Nine-tenths of all Federal personnel are located outside Washington—elsewhere in the United States and in foreign lands. This is a vast establishment. It requires effective organization and management and speedy communication between headquarters and field levels. Lacking these—and they are not always present—there may be a failure to explain effectively to thousands of points in the field new policies and program goals determined in Washington.

To close the communication gap as much as possible, to make Federal employees everywhere more responsive to directions from Washington, to improve service to the public and to realize all possible economies, there was begun in 1961 a review of field operating and management problems. It was undertaken by a task force of officials from the White House, the Civil Service Commission, and the Bureau of the Budget. These representatives held conferences with field officials in cities throughout the country. This led to the issuance by the President on November 13, 1961, of a memorandum to department and agency heads calling for: (1) improved management and direction of Federal offices in the field; (2) creation of interagency working groups, or Federal executive boards, in important Federal field centers, such as Chicago and Atlanta; and (3) critical appraisal by agency chiefs in Washington and their field officials of field management procedures.

Field Boards of Federal Executives

Federal executive boards have been established in 11 cities and a twelfth is being organized in Kansas City. Each board is composed of high-ranking officials of each department and agency in the board's metropolitan area. The boards strive for closer coordination of field activities, bringing together the heads of some 550 Federal field establishments.

The boards are actively engaged in reviewing common management problems which might be approached on a joint basis in the field. Already, improved knowledge and coordination of field activities can be noted. The boards have facilitated the interagency placement of employees who are surplus to one agency, they have fostered cooperative talent searches in the colleges and universities, and they are pooling experience and resources to achieve increased management effectiveness. As an example, the Philadelphia executive board is assisting the Bureau of the Budget in a pilot project to develop a plan for interagency use of existing electronic data processing equipment in the area. The other boards are now exploring the possibility for the joint use of such equipment in their areas.

The boards also have helped expedite implementation of new Government-wide programs. For example, the boards have actively supported the program for Equal Employment Opportunity through sponsoring workshops, conducting hiring surveys, and explaining reporting requirements. They have put their efforts behind the work of the President's Commission on the Status of Women. Similarly, the boards have helped Federal managers develop an understanding of the new programs on Employee-Management Cooperation and Equal Opportunity in Housing.

The field boards hold promise as effective vehicles for marshaling the joint resources of the many department and agency activities outside of Washington. This, together with increased concern by the headquarters of the departments and agencies for improved field organization, operation, and communication should result in a more cohesive and responsive Federal structure.

Appraisal of Field Organization and Management

In response to the President's November 1961 memorandum, the Bureau of the Budget issued guidelines for an appraisal by each agency of its field organization and management. In some agencies such analysis already had been begun. In some others the President's directive provided the impetus. Among the more significant results in the past few years have been major reorganization of the Post Office Department's

regional offices; changes in the structure of the Civil Service Commission, with a resulting reduction in staff in the past 8 years from 3,000 to 2,500, although workload increased; basic reorganizations in the Department of the Army and the Veterans Administration; the establishment of the Defense Supply Agency; a movement by the Federal Aviation Agency to give more responsibility and authority to its regional administrators, with streamlined operations as the primary goal.

During the month of August 1961 a reorganization of the Atomic Energy Commission was accomplished. The lines of communication throughout AEC were shortened, allowing key program personnel to spend more time on technical problems rather than administrative detail, and program direction was strengthened. Another action of the reorganization was the establishment of a focal point of control at AEC headquarters over six multiprogram laboratories in the field. This structure provides for more direct headquarters consultation, supervision, review, and coordination of laboratory research programs.

Another major appraisal of field organization is that completed last December by the Internal Revenue Service. It resulted in plans to make fundamental changes in the structure of field activities. Consolidations, streamlining of overhead operations, and better arrangement of functional responsibilities are involved.

REGULATORY ADMINISTRATION

In the past few years, the Federal regulatory agencies have achieved major advances in streamlining their procedures and speeding up their handling of cases. These improvements are of incalculable benefit to industry and the public. As prescribed by Congress, the regulatory agencies' duties reach into many vital sectors of the American economy—passenger and freight transport on the surface and the air, broadcasting, competitive business practices including advertising, the sale of natural gas and electricity, protection of the investing public, and protecting business, labor, and consumers from unfair or deceptive practices. Wise and expeditious decisions by public bodies can make a major contribution to efficient management of business, the welfare of labor, higher productivity, increased investment and, in total effect, promoting the Nation's economic growth.

For these reasons, concern within and outside of the Government had been mounting in the late 1950's over the build-up of backlogs of pending cases in some agencies and the increases in time it took to dispose of these cases. Efforts to solve these problems were begun under former President Eisenhower and have been intensified by the present Administration. The results have been substantial and gratifying.

Under new authority granted through acts of Congress and Presidential reorganization plans and by their own efforts to improve administration, the regulatory agencies have devised highly effective methods for speeding up their handling of the public's business and shrinking the backlogs of pending cases. Administrative proceedings have been shortened, saving companies, unions, and public bodies which come before the agencies countless dollars in legal fees and travel expenses.

Among some of the noteworthy accomplishments, the Federal Trade Commission in July 1961 strengthened its prohibitions against *ex parte*, or private, communications between persons involved in a case and commissioners or staff members who might decide the case. The Administrative Conference of the United States, created by the President in 1961, approved last year a code of behavior governing *ex parte* contacts by persons outside an agency. The Conference recommended that each agency adopt regulations putting the principles of the code into effect. The Federal Home Loan Bank Board has done so. The Securities and Exchange Commission is studying comments on a set of rules it proposed in January 1963. Certain agencies are in the process of developing new rules.

Backlogs Reduced

The Federal Power Commission has made significant progress in reducing a backlog which, when this Administration took office, the President found "incredible." For example, as of July 1, 1961, the Commission had pending 116 natural gas pipeline rate cases. They involved potential refunds to consumers of \$1 billion collected from natural gas rate increases put into effect by pipeline companies pending final approval by the Federal Power Commission. Under the law, a pipeline company may put higher rates into effect if the Commission has not acted on its application for increase within 30 days. If the Commission later disapproves or reduces the increases, refunds must be made to customers. By January 1, 1963, the Commission had disposed of 85 cases, had ordered refunds of \$350 million and had reduced rates by \$62 million a year. Counting new cases received, the Commission's backlog of pipeline rate cases is down to 48. This achievement was made possible by the settlement program established by the Commission which emphasizes disposition of cases through conference rather than lengthy formal proceedings. Commission policy requires that settlements be consistent with results that might be expected from the lengthier, more formal process of adjudication. The fact that the ratio of refunds to cases

decided actually increased during the past 6 months indicates that the settlement policy is effective and does not compromise protection of the public interest. The consumer has benefited and the pipeline companies now have firm balance sheets and a more reliable basis for sound financial management.

Another agency which has been troubled by a growing backlog of cases which was becoming unwieldy was the National Labor Relations Board. Among its more important duties are holding representation elections, in which workers vote on whether they want a particular union to bargain for them, and investigating and ruling on charges of unfair labor practices. As the number of election petitions and charges filed with the agency grew, and as speedier handling in field offices moved more of them to the Board itself for decision, it became apparent that basic procedural changes were essential to keep the Board members from being inundated by a continually increasing backlog of pending cases. A few figures illustrate the rising tide of cases which temporarily engulfed the Board:

<i>Year</i>	<i>Cases pending Board decision</i>
1958.....	421
1959.....	609
1960.....	852
1961.....	1,009
1962.....	488

The dramatic reduction in 1962 is attributable to delegation by the Board, effective May 15, 1961, to its regional directors of authority to decide contested representation cases, subject to limited Board review on request. In 1962, regional directors decided some 2,000 contested representation cases. In 80% of the cases, no Board review was sought. The time required to issue a formal decision on a petition for a representation election was reduced from more than 80 days to 43 days. With fewer representation cases on its calendar, the Board was able to whittle down the backlog of unfair labor practice cases.

Meanwhile, a new emphasis by the General Counsel of the National Labor Relations Board on voluntary settlement of disputes which had led to filing of unfair labor practice charges was bearing fruit. As more of these cases were resolved

voluntarily by the parties, the number referred for hearing and Board decision was cut back. The proportion of unfair labor practice charges resolved through voluntary settlement rose to 77% in 1962 as against 73% in 1961. The new emphasis on voluntary settlement has saved the Government about \$5,400,000 in litigation costs and saved labor and management unknown sums. Through other management advances the time required for agency consideration of and decision on unfair labor practice charges, which were not settled voluntarily, also has been shortened from an average of 467 days in 1958 to 327 in 1963.

Delegations of Authority

Other agencies have speeded up disposition of cases and relieved commissioners of handling less important matters through delegation of authority.

Under a Presidential reorganization plan approved by the Congress in 1961, the Civil Aeronautics Board has delegated to hearing examiners the responsibility for making the agency decision in all domestic cases, subject to discretionary review by the Board members. If the recent experience under this system continues, the members eventually will be relieved of about 35 domestic cases a year—or 50% of the domestic economic caseload—on which they otherwise probably would have to hear oral arguments, read briefs, and render decisions.

The Board also has delegated to its staff for decision 54 other types of matters which do not require formal hearings. Revision of CAB rules has freed certificated air carriers from having to apply for Board permission for such routine matters as trans-Atlantic charter flights during the tourist season. In all, the agency estimates it and the industry will be relieved of more than 700 applications and filings a year.

The Federal Communications Commission, under 1961 amendments to the Communications Act, created a review board last August. It was authorized to review certain types of initial decisions by hearing examiners and to decide many interlocutory matters. Review board actions eventually may relieve the Commission of 50 to 75% of its workload growing out of formal hearings, thereby enabling the Commissioners

HOW THE ICC REDUCED CASE HANDLING TIME BY DELEGATING RESPONSIBILITY FOR SPECIFIED CASES TO EMPLOYEE BOARDS

BEFORE ESTABLISHING REVIEW BOARDS—1961

TOTAL NUMBER OF CASES DECIDED
BY COMMISSIONERS

2260 CASES

HANDLING TIME



AFTER ESTABLISHING EMPLOYEES REVIEW BOARDS—1962

COMMISSIONERS DECIDE

1737 CASES—**76%**

EMPLOYEES REVIEW BOARDS DECIDE

523 CASES—**23%**

HANDLING TIME



to devote more time to consideration of the important and difficult policy questions confronting them.

Under legislation enacted in 1961, the Interstate Commerce Commission has delegated to three-man employee boards responsibility for deciding or reviewing initial decisions of hearing examiners in certain types of adversary cases. Use of the boards has cut the time required for a decision from 5 months to slightly more than 2 months. Appeals from the Board's decision to three-man panels of Commissioners have been filed in only 18% of the cases. In 90% of these, the boards were upheld. The Commission has freed itself from considering an additional 700 cases a year by limiting the right of appeal in adversary cases decided by panels to cases

involving issues of general transportation significance. More effective use of the Commission's staff is also being achieved by a new practice of not rewriting initial decisions upheld on review. As a result, in 1962 the final disposition of 567 cases was accelerated.

New Management Controls

The Interstate Commerce Commission also has speeded up its handling of cases before it by use of an automated management control system. This system enables management to expedite lagging cases and also pinpoints the need for procedural improvements. For example, after criteria for judging requests for postponement of hearings had been tightened, one bureau of ICC reduced its time for processing cases by 18.3%. Although the number of new cases received in 1962 was 14% greater than in 1960, the number of cases pending was reduced from 5,099 on January 1, 1961, to 4,711 at the end of 1962. The average time for completing action on a case also dropped from 9.1 months in 1960 to 7.1 months in 1962. Effective January 1963, the control system was expanded to provide information about time lags at 14 key processing steps. This expansion will enable management to achieve still greater benefits.

The Federal Trade Commission has intensified and speeded up its enforcement efforts. In seeking to stop unlawful business practices it is emphasizing an industrywide approach, as distinguished from action against individual firms. In June 1962, the Commission also began issuing binding advisory opinions to businessmen who requested them, enabling the businessmen to know in advance whether a particular course of action would violate any of the laws enforced by the Commission.

FUTURE DEVELOPMENTS

The task of improving management, increasing productivity, and cutting costs is never finished. Research and study seeking the development of new and better management tools is one of the important avenues of future progress. Below are listed some of the areas where innovative research will be emphasized in the next few years.

Automatic Data Processing

The initial business-type uses of automatic data processing equipment generally were for administrative operations such as preparing payrolls and accounting records. More and more we are learning to use this equipment to help accomplish the main mission of the agencies. Examples of some of the uses that are being developed include processing the mail, regulating transportation, and forecasting the weather. Another trend that is being encouraged is the automation of information at the source or as close to the source as possible. This activity embraces, for example, devices that automatically measure and transmit to a computer the level and speed of river flow and machines that read typewriting and make it available to the computer without human intervention. Still another problem of significance being actively studied is the automatic storage and retrieval of information ranging from research in science to applications for patents.

Planning

As a consequence of the increasing complexity of Government, the development and use of long-range plans are becoming increasingly necessary in formulating and coordinating Federal programs, in foreseeing the full consequences of contemplated actions, and in preserving flexibility. Government agencies are making a determined effort to realize the

potential for improved management inherent in long-range planning. In increasing numbers, agencies are studying the problems of defining goals, developing proper courses of action for attaining them, and preparing and executing budgets in terms of basic program decisions.

Productivity Measurement

Though productivity has increased dramatically in a number of agencies, we cannot state what the productivity trend has been for the Government as a whole; satisfactory ways to measure productivity changes in many sectors of the Government have not yet been developed. The Bureau of the Budget, in cooperation with a group of agencies, is now engaged in intensive research to develop suitable productivity measures for Government agencies.

These measures will relate the volume of goods or services produced to the amount of manpower and other resources used in producing them. The measures may then be used as an overall index of efficiency as well as in planning, budgeting, and control.

Work Design

A great deal of scientific effort has been expended to design work so as to achieve maximum efficiency. Most of this effort has been devoted to the application of engineering principles to work. There are indications that manpower utilization may be enhanced by designing work so as to give greater consideration to the characteristics of the human beings who are to perform it. A number of Government agencies are preparing to cooperate with the Bureau of the Budget in testing and measuring several new approaches to the design of work.

Industrial Management

A group of agencies have joined together to seek out, create, and apply new techniques of industrial management. Under the guidance of this group studies are being made to apply the Line-of-Balance technique (a management device now used for

controlling the scheduling of repetitive operations) to the control of costs. Success in this effort would provide a modern management tool in controlling both production schedules and cost.

The President has pledged that, through increasing efficiency in management and operation, any necessary expansion in Federal employment will be held proportionately lower than the increase in the Federal workload required to serve the Nation. Building on the momentum of the strong efforts now under way, as highlighted in this report, special emphasis towards that objective will be given in the next 2 years to—

- management of property and supply activities,
- management and use of ADP equipment,
- strengthening measures to hold down the growth of Federal employment,
- introducing and extending systematic means of measuring organizational productivity, workloads, and work performance,
- comprehensive planning as a basis for formulating and evaluating agency programs and budgets.

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